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ORIGINAL ARTICLES.

SUSCEPTIBILITY AND IMMUNITY, WITH SPECIAL REFERENCE TO SURGICAL CASES.'

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The following remarks upon the topic of immunity and susceptibility, relating especially to surgical cases, are the outcome of a direct request by the Business Committee of the Association to prepare a paper upon this subject. It certainly is a topic which should earnestly engage the attention of all surgeons. Indeed, the subject is one of fundamental importance, since the conditions which predispose to infection or enhance resistance to it are matters of the greatest interest to every operating surgeon, and should be taken into account in weighing the advisability of all grave emergency operations.

I prefer to approach the subject first from the side of immunity, which may be spoken of (1) as local and general; (2) as congenital or acquired; and, (3) as absolute and relative, according to the light in which we consider the question.

First of all, man seems to be immune from numerous infections which are common to many of the domestic animals—for instance, hog cholera, symptomatic anthrax, and chicken cholera; while he is in common with them susceptible to the infection of anthrax, glanders, tuberculosis and actinomycosis. Secondly, men differ very much among themselves in susceptibility to the same disease. This is particularly true with regard the exanthems, smallpox, cholera, and influenza. A goodly percentage of mankind escape scarlet fever, though repeatedly exposed; and I have often seen children who have never had it exposed to measles, and yet without contagion. Of course we explain this, so far as mere words can, by saying that at the time of exposure their bodies were not receptive or were resistant; all of which is a statement of apparent fact, but no explanation whatever.

We see many similar differences among animals,
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or at least we have many analogous instances. Birds suffer in nowise from belladonna nor opium, nor do goats from nicotin. The hedgehog is perfectly immune to the bite of poisonous snakes. The freedom from bad results seen in the practice of veterinary surgeons is due to the relative immunity from infection of the animals upon which they operate, and one of the hardest lessons to teach young workers in the surgical laboratory is that they must not disregard the rules of antisepsis in human surgery as they do when experimenting and operating upon dogs.

Susceptibility seems, in fact, to be inseparable from a study of the causes which favor infection, which I would take up in the order following:

1. The Virulence of the Infecting Organisms and the Amount Introduced. - As between the various bacteria, there is the widest difference in the matter of virulence, and it is certainly true that even in the same species there are great differences under varying circumstances,—these depending upon conditions as yet incapable of exact statement. With some organisms it is enough to infect an animal with only one in order to bring about a fatal result. In the guinea-pig, for instance, a single virulent anthrax bacillus will produce death; whereas in more resistant animals many are required, and in those which are immune, no amount seems to disturb the life of the creature. Man is much more susceptible to pyogenic organisms than most of the lower animals. When several species are introduced at once, some of them develop and do harm, the others die; but the same results cannot be gotten with animals of different species. Mice are very susceptible to anthrax; rats, almost immune. Rabbits and mice are extremely susceptible to rabbit septicemia; guinea-pigs and rats, immune; also sparrows and pigeons. Spirilla of relapsing fever have only been successfully inoculated into apes. Leprosy, syphilis, and gonorrhea have never been transmitted to any of the lower animals.

The virulence of micro-organisms is itself affected by temperature, sunlight, moisture, dryness, as well as by association with other bacteria. Those which have been repeatedly passed through the animal body become more virulent than those cultivated for generations in laboratory test-tubes. Variable virulence is especially characteristic of

the cocci of erysipelas, the colon bacillus and the anthrax bacillus. The common bacillus prodigiosus is ordinarily held to be non-pathogenic, but its presence has a strange, often reinforcing, effect upon the virulence of certain other organisms, in some cases enhancing it, in others suppressing it. The natural immunity to anthrax of rabbits and pigeons can be overcome by injecting the prodigiosus at the same time. Roger has maintained that the prodigiosus produces a decomposition product which is soluble in glycerin and which produces a modifying action upon the animal organism. Moreover, by previously injecting substances which dissolve blood-corpuscles or affect their integrity,-for example, pyrogallol and hydracetin, -Gottstein has made guinea-pigs, which are ordinarily immune to chicken cholera, susceptible to the disease. So, too, white mice can be made susceptible to glanders, from which they are ordinarily exempt, by producing an artificial diabetes by adding a little phlorizin to their food. Anthrax has been communicated to immune animals by subjecting them to the influence of curare, chloral, and alcohol. This is particularly true of dogs, frogs, and pigeons.

Perhaps no better illustration of the combined effects of exciting and contributing causes can be found than the occurrence of pneumonia. The micrococcus lanceolatus is present in the salivary secretions of many individuals. Nevertheless, it acts as the infectious agent in producing croupous pneumonia only under peculiar circumstances, the most notable of which appears to be exposure to cold, bad hygienic surroundings being a secondary and contributing cause.

2. Association. - This, which has been already alluded to, deserves further consideration under a separate head. Under natural conditions, bacteria are seldom found in pure cultures, while by mutual association remarkable changes are produced, whose results are so strange and yet so contradictory, that no law governing them has as yet been formulated, it being necessary to establish each case by experimental investigation. One of the most remarkable illustrations is that of a combination of anthrax bacilli and erysipelas streptococci, each of which by itself is virulent; vet, when introduced together, they appear wellnigh harmless; the diplococcus of pneumonia, on the other hand, when combined with the same anthrax bacillus seems to have a greatly augmented

Very small doses of pure cultures of bacillus pyocyanus are fatal to rabbits if, at the same time, a considerable quantity of a filtered culture of the same bacillus is thrown into their veins. The animal can resist either alone, but the combination of the two is too much for it. The same is true of symptomatic anthrax. It is also true of old and attenuated cultures of the common pyogenic organisms, if at the same time a living culture of proteus vulgaris be introduced. This may shed not a little light upon the epidemics of typhoid fever among those who have a common water supply.

Some rather startling facts have been discovered incidentally to the study of immunity and infection. Thus, Roux found that the bloodserum of a horse which he immunized against tetanus neutralized the poison of the cobra, though the converse was not true; also that the blood-serum of a rabbit made immune against hydrophobia, will protect a susceptible animal against a dose of cobra poison five times as large as that ordinarily required to kill.

3. Hereditary Influences.—That immunity is transmitted from parent to offspring no one will dispute. Explanation of this fact is almost as remote as ever, but its recognition is of the greatest importance to practising surgeons. Liability to infection seems, to some extent at least, a feature of hereditary habit of tissues.

4. Local Predisposition. This is a also a factor of great importance. Once given a distinct infection, and hyperemia is often a contributing cause, due to inflammation. On the other hand, anemia of tissues seems sometimes to be a favoring condition. When dogs are freely bled, the pneumo-bacillus of Friedländer will affect them as ordinarily it will not do at all. In parts involved in chronic congestion, the blood flows. more slowly, while vessels are dilated and susceptibility is apparently thereby increased. Infection here produces a type of disease often spokenof as hypostatic inflammation. General anemia is also a predisposing cause; while such toxemias as diabetes, etc., are still more so, the liability of diabetic patients to suppuration and gangrene being proverbial.

The presence of foreign bodies has also much to do with infection, since when bacteria and foreign bodies are introduced together, the presence of the latter will practically always excite suppuration, which would, without it, not occur. The withdrawal of trophic nerve influences also permits of infection, as is instanced by the ease with which bedsores form in paralytic patients. Obstruction to circulation or to escape of secretion, also easily permits infection, for example—in the appendix, the kidney, the gall-bladder, the sali-

vary ducts, etc. Furthermore, one may formulate a quite comprehensive statement, and say that all such lesions as solutions of continuity, hemorrhages, degenerations, vascular stasis, perforations, etc., increase more or less the liability to infection. The ease, for instance, with which the colon bacillus pierces the coats of an intestine which has been in the slightest degree disturbed or abraded is wonderful. They collect, for example, in the sac of a strangulated hernia, and even other organisms are often found. Hence the rule for careful disinfection of the sac and the exposed gut before returning the latter to the abdomen. In time past, it has been held that the presence of blood-clot within a wound was most undesirable, it being thought that it offered a favorable nidus for the development of bacteria. It has been more recently shown that virulent organisms injected into the blood-clots occasion no suppuration. Blood-clot, therefore, has of late been utilized in the healing of a certain class of wounds, and we now know that retained clot which produces no undue tension is not a common source of danger.

5. Vestiges and disappearing organs and tissues .-It is being more and more clearly established that those organs which are, in the course of ages, undergoing retrogade metamorphosis, or are disappearing, are especially liable to infection and inflammatory destruction. This is particularly true of the appendix, and is true as well of those collars of lymphoid tissue which surround almost all of the original outlets or inlets of the archetype embryo. We see it well illustrated, for instance, in the lymphoid tissue about the pharynx, the pharyngeal, faucial, and lingual tonsils. If it should prove true, though I hold it not yet to be completely demonstrated, that cancer is a parasitic condition, we shall have here a beautiful illustration of this fact, in that it is notorious that cancerous changes occur most often in localities just alluded to, as, for instance, the pylorus, the cecum, etc.' At all events, it seems to be

largely true that lymphoid tissue is retrogressive in its tendency, and all such tissue is peculiarly susceptible to infection.

6. Preexisting Disease. - Here must be reckoned, first, previous and long-existing toxemias, e.g., scurvy, diabetis, syphilis, etc.; second, diathetic conditions, like lithemia, cholemia, acetonuria, and the various conditions represented by oxaluria, or those in which acetone, peptone, or excess of uric acid are found in the urine. It has been recently shown by the experiments of Pansini that the addition of uric acid as well as of glucose to blood-serum markedly diminishes its bactericidal activity. On the other hand, the injection of an alkali into the blood of a rabbit increases its resistance to anthrax, and enhances the bactericidal power of its blood-serum. Third, the immediate or recent results of other acute diseases, as, for instance, tuberculosis following quickly upon measles. Recent toxemias have, in fact, an important bearing for us, inasmuch as after typhoid or other acute wasting disease, including the exanthemata, surgical operations are sometimes followed by a failure of tissues to heal, and should consequently be postponed until after complete recovery, save in cases of emergency. The puerperal state is also one in which operations are to be avoided, if possible. But, above all the ordinary expressions of recent toxemia is to be placed that somewhat vague or varying condition which I like to call enterosepsis, or intestinal toxemia, which has been spoken of in time past as fecal anemia, stercoremia, copremia, etc., as one whose existence makes positively dangerous the performance of operations of any kind, since it certainly predisposes to septic disturbance. It is a condition of chronic intoxication in more or less mild degree, in which state no wise surgeon likes to operate unless compelled. I would wish, also, to place much more stress upon a still somewhat vague condition, ordinarily spoken of as lithemia, characterized by hyperacidity of, and often by crystals of oxalates in the urine, as one which should always be corrected, if time be given, before any serious operation. Of itself it is serious, since it often leads to the auto-intoxication just spoken of, from the intestinal canal; and the two together constitute a condition which is quite likely to baffle the surgeon's best efforts.

There are also to be taken into consideration the anatomical changes peculiar to the various ages; for example, the arterial scleroses of old age, with their accompanying cardiac debility and other tissue alterations, which favor sluggishness of repair, and lead not infrequently to

If we are to regard cancer as an infection, cancer mortality is lowest where the struggle for existence is hardest and the density of population greatest, and the tubercular mortality the highest; while among the wealthy, where the standard of health is better and life is taken easier, and among the fast, cancer mortality is highest. According to Williams, there are no more potent factors in the causation of cancer than high feeding and fast living. Cancer is twice as frequent among the whites as among the blacks, it being aotorious that negresses rarely suffer from uterine or mammary cancer. On the other hand, they are very prone to uterine fibroids. Cancerous diseases are almost or quite unknown among the negroes, even in their native country. Williams states that this immunity applies alike to meat-eating and vegetarian savages. On the other hand, cancerous diseases are very prevalent in all highly civilized communities. The proportion of cancer among dark-complexioned whites is lower than in the light-complexioned—in the proportion, according to some statistics of 69 to 31.

sloughing or to bedsores. Amyloid changes also betoken impaired vitality. Nursing infants, while apparently exempt from many of the infectious diseases, possess relatively small power of resistance to surgical operations. General anemia and impaired body nutrition predispose to most infections, and acute starvation notoriously so.

7. Personal habits and environment.—Diet has much to do with tissue resistance. Rats fed on bread are more susceptible to anthrax than those fed on meat. Hunger makes pigeons highly susceptible to the same disease, and artificial immunity induced in various animals is quickly destroyed by starvation. Prolonged thirst seems to have the same result. Fatigue notoriously reduces immunity, either in animals or men. This is abundantly shown upon the former in various laboratory experiments, and in the latter instance by the accumulated experience of centuries. Drugs or foods which impair the vitality of the red corpuscles reduce immunity; and even by the injection of water into the circulation, the germicidal power of the blood may be reduced. If this be so, one may better appreciate the effect of the various toxemias alluded to above, which proceed from the intestine or from the genitourinary tract. Climate has not a little to do, as have also extremes of weather, in influencing resistance to infection, or recovery after serious operations. Pasteur has shown that fowls, which are naturally immune to anthrax, become infected when subjected to artificial refrigeration after inoculations. Dark habitations, poorly ventilated, constitute surroundings which notoriously pre-Rabbits inoculated with tuberculosis and confined within a dark, badly ventilated cell. die, while others similarly inoculated and allowed to roam at large, present but slight evidences of Certain occupations predispose. This is preëminently the case, for example, with workers in mother-in-pearl, who are exceedingly liable to a peculiar form of osteomyelitis; while the peculiar effects of phosphorus and mercury in producing necrosis are classical. It is important also to remember that the prolonged necrosis of these drug intoxications may produce such changes in the blood and tissues that vital processes of repair, cell resistance and chemiotaxis may be so far interfered with as to facilitate subsequent infection. This, too, may be at least the possible effect of certain antiseptic agents, which, used in too great strength, interfere with normal reactions and lead to decomposition, either of drugs or of vital fluids, by whose products harm may be done.

Finally, the influence of local injury to tissues, particularly of contusions, which cause tissues to lose their vitality, is a thing to be strenuously insisted upon as predisposing to infection. Both in clinical experience as in experimental investigation, it is every day shown that tissues which ordinarily resist infection succumb to inoculation after bruising or the ligature en masse.

8. Fetal infection. - In only a very limited class of cases may infection be transmitted from mother to fetus. But when this can occur the surgeon is often deeply concerned. While syphilis is the only infection capable of direct transmission through the ovum or spermatozoön, intrauterine infection may yet occur, since the placenta is not a perfect filter, but is occasionally passable by microörganisms. It may be made pervious, either by preexisting lesions or by virulence and activity of the bacteria. In animals, for instance, the bacilli of chicken cholera and of symptomatic anthrax, as well as even the pyogenic cocci, can traverse this barrier. In mankind, infection has been observed in utero in smallpox, measles, scarlatina, relapsing fever, syphilis, tuberculosis, croupous pneumonia, typhoid fever, anthrax, and common septic infection.

Conditions which afford protection or immunity.—
Immunity may also be (a) local or constitutional;
(b) congenital or acquired; and (c) may concern some particular infection, or amount to a general protection. Immunity for a particular infectious disease is often conferred by one attack. This is, for the most part, true of the exanthemata, yellow fever, etc. It is not true, however, of tuberculosis, nor the so-called surgical infections; neither is it true of septic infection, e.g., septicemia, etc. It is true in only very modified degree of diphtheria.

Immunity is in some sense a racial characteristic, as, for example, in the case of the Japanese, who, it is said, never have scarlet fever; and of the negroes, who escape yellow fever. The essential characteristic, however, which makes the negro immune against yellow fever does not protect him against tetanus, to which he is unusually susceptible. Negroes are less liable to malaria and dysentery than are Europeans. Japanese are more susceptible to beriberi than are Europeans.

Acquired immunity may be natural or artificial; natural in the instances above-mentioned, artificial when produced by inoculation with attenuated bacteria, or by the injection of certain chemical substances, or by change of environment, or by modification of food or by drugs. The most effective, the most prompt, and the most measurable

effects, are produced either by inoculation with hacteria of attenuated virulence, by injection of sterilized cultures, by employment of blood-serum, or of some antitoxin separated and concentrated from it, taken from animals rendered immune by one of these methods. It should be emphasized that serum, or its preparations, used for this purpose, deserves more than the term "protective" often applied to it. It is often, in effect, a healing serum, since it does more than protect against the disease—it usually helps to cure it while in its active stage. The question of how serum produces immunity, of absorbing interest as it is, is not one to be discussed in this place; neither is the question concerning the origin of the immunizing substance, be it what it may. Acquired immunity is not necessarily a matter of juggling with bacteria of the disease in question, but may be produced by the employment of others. Of interest, also, is it to state that individuals or animals possessing a natural immunity against a given disease, have in their blood-serum no immunizing substance as against that disease. This substance is only to be produced by an artificial immunization.

In a general way, it may be said that the conditions which afford protection, so far as they are controllable by the surgeon, are those which tend to increase what, for lack of better knowledge, we must call vital resistance, and to decrease vulnerability. The ideal condition is that which is summed up in the generally received expression of "perfect health," in which the various secretions and fluids, possessing their normal acidity or alkalinity, are sufficient to destroy or render inert harmful organisms entering their precincts. Where there is perfect equilibrium between ingestion and excretion, which shall permit no extravascular excitement, no congestion, no exudate which may become infected-in other words. where the natural functions are performed in an ideal manner-under these circumstances almost any accident may be survived and repaired without perceptible struggle, the tissues and fluids in their healthy state being abundantly able to dispose of such bacteria as may accidentally enter. Traumatic exudates are now absorbed, and speedily; the hyperemia of irritation is quickly compensated for; while here we find those general conditions which surgeons everywhere rejoice to see, and under which they feel warranted in making any necessary interference. Here, too, should infection by accident occur, as by the introduction of a foreign body, phagocytosis is so prompt and filtration through lymph nodes so thorough, that the worst which may happen is local suppuration.

This general condition is met with in its most complete expressions where no hereditary influences have conspired to dwarf organs or impair their activity; where no poison, like that of syphilis, or uric acid, or alcohol, interferes with perfect nutrition and normal cell activity; where exposure has not lowered tissue vitality; where starvation and fatigue have not conspired to temporarily reduce it; and where mental worry has not lent its aid in contributing to impair normal processes. These, then, are the conditions which afford protection and under which the surgeon loves to work.

The conclusions of surgical importance which may be legitimately reached from the study of the conditions dealt with in this paper, are essentially these: That the surgeon in emergency cases has to do the best he can, not merely with the means at hand, but with the tissues at hand; and here, so long as he can control what may happen outside of the body, he has done his full moral and legal duty. On the other hand, in any case where patients deliberately come under observation, and where time may be afforded, it is the surgeon's bounden duty, -bearing in mind a summary of the conditions which notoriously conspire, upon the one hand, to lower vulnerability, upon the other hand, to afford protection, -to so order the habits, the diet, the surroundings and the preparation of his patient, as to restore his tissues and vital fluids, so far as possible, to their normal condition, before he interferes with their functions by an operation.

A distinct and as yet an unworked field lies before him who will study carefully and for sufficient length of time the effect of anesthetics in increasing susceptibility and infection. This is a problem which must be worked out rather upon human patients than upon animals, since the conditions are so exceedingly different, most of the animals used for experiment being too relatively insusceptible, dogs notoriously so. I have for years cherished the opinion that anesthetics affect all people to a greater or less degree in thisdirection; yet am not able to present to you any definite statistics or statements, Loss of blood is certainly a factor lowering vitality; and in that complex condition of shock, it must assuredly be that natural immunity is at least temporarily lowered. Equally important in my estimation are the auto-intoxications and toxemias, of which two particularly call for mention here. effect of sugar in the urine, or, rather, the effect of the condition which leads to its presence, is everywhere recognized; but I am more and more

convinced that in the body condition which is most easily recognized by hyperacidity of urine, and which is so often a complication of uricacidemia, oxaluria, etc., we have a grave and sometimes insuperable obstacle to ideal success after The other condition to which I particularly allude, is that which I usually speak of as intestinal toxemia, and relates to auto-intoxication produced by absorption from the contents of the alimentary canal of substances which ought not to be therein retained, nor allowed to so accumulate nor undergo chemical changes which shall permit such absorption. This condition is, in large measure, represented by chronic constipation; and yet it certainly does occur in patients who have a regular daily habit of alvine evacuation. It is to be recognized by the hue of the skin, by the appearance of the tongue, often by the presence of indol or indican and ethereal sulphates in the urine, and quite often by the diminished elimination of the fluid and mineral elements of this fluid. It should be combated, if possible, by a careful course of hot-air or Turkish baths, copious draughts of fluid, the administration of saline laxatives and of intestinal antiseptics, among which in my estimation the very best is a solution of mercury and arsenic in hydrocholoric acid, given in the shape of mercuric chlorid, dissolved in dilute muriatic or nitromuriatic acid, with the addition of liquor arsenici I have tried a great variety of the chloridi. vaunted intestinal antiseptics, but have settled upon the conviction that some such mixture as this gives results far superior to any which can be obtained from salol, naphthalin, etc. If, in conjunction with these measures, we resort to exercise, when it can be taken, to sunlight, which is always available, and perhaps to massage, by which circulation is quickened and equalized, excretion hastened, and waste material dislodged and taken out of the system, we have done what we can to prevent infection.

I have, furthermore, for years, contended that since the inauguration of the so-called antiseptic era, in our enthusiasm for combating infection from without, we have lost sight of, and, to a great extent, neglected a most important truth, which we cannot afford to disregard, namely, the importance of recognition and the successful prevention of infection from within. Certain it is that in the majority of instances the latter (i.e., infection from within) is much the more liable to ensue, and particularly in a class of cases where one is tempted, for one reason or another, to be less careful than he ought to be. I would give,

then, this most important practical conclusion to my remarks, that only he who weighs judiciously the possibility or the imminent probability of one or the other of these forms of infection is really capable of guarding against both of them, and that the best surgeon is he who will always take time, when it can be afforded, for the preparation of his patient for operation. In other words, I would remind you of Sir James Paget's too often neglected statement, that we ought to examine patients for operation with fully as much care as we do for life insurance; and add to it, that if this examination be so conducted we shall often find that which will make us hesitate and prepare them, before subjecting them to the enhanced risk of what may, in other respects, seem for their

INTUBATION OF THE LARYNX IN DIPHTHERIA, WITH REPORT OF TWENTY-FIVE CASES.

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This subject has been so exhaustively written upon during the past few years that it is with some little hesitancy I report the following cases, directing attention to a few points worthy of special mention. The following is a resume of a number of cases of intubation performed by me during the past year. Success in intubation depends upon the following conditions: (1) the time at which the operation is performed; (2) the degree of toxemia existing; (3) the treatment following the introduction of the tube.

In consideration of the first condition regarding the time of the operation, it may be said that each case is a law unto itself, but a few general principles that have guided me in my cases are as follows: If there be any membrane in the fauces, or if a history of diphtheritic infection and dyspnea, due to laryngeal stenosis, appears, the sooner the tube is introduced the better for the patient, because of the great difficulty of perfectly oxygenated blood in coping with the overpowering influences wielded by the toxins of the Klebs-Loeffler (diphtheria) bacillus. There is a still greater difficulty when imperfectly oxygenated blood has to accomplish the same result, not to mention the demoralizing effect caused by the muscular fatigue of forced respiration; and lastly, the untoward results produced by a plus quantity of CO, in the blood.

The degree of toxemia existing prior to or at the time tubage is performed varies greatly with each case. It does not necessarily depend upon

	Sex.	Age.	Duration before intubation of larynx.		a army 14 (15 the second 16 (16 the second 16 (16 the second 16 the seco	de aliminación de la	ed pantad pagasan gabagan gabagan gabagan
No.			Laryngeal Symptoms	Pharyngeal Symptoms.	Time Tube Worn.	Complications.	Result
-	м	13 mo.	12 hrs.	24 hrs.	Tube introduced and allowed to remain 6½ days—withdrawn and after period of 3 hours reintroduced and let in six days; withdrawn and after hours was again introduced, remaining 4½ days.	*BB2.39 *BETANTET 1278/801969: 465	Recovery
2	F	2 yrs. 8 mo.	6 hrs.	12 hrs.	5 days.	Nephritis.	Recovery
3	M	4 yrs.	10 hrs.	36 hrs.	6 days.		Recovery
	F	7 yrs.	4 days.	5 days.	12½ hours.	Paralysis of heart.	Death
5	F	3 yrs. 5 mo.	4 hrs.	2 days.	Tube in 5 days, after 8 hours rein serted for 6 days.	diver oft Looyad Nangtyba.	Recovery
6	M	2 yrs.	8 hrs.	3 days.	Tube in 5 days, after 10 hours rein troduced for 6 days.		Recovery
7	M	3 yrs. 8 mo.	4 hrs.	2 days.	Tube in 5 days, after 4 hours reintroduced for 4 days.	- Maria and Andrews and the second a	Recovery
8	F	4 yrs.	12 hrs.	ı day.	Tube in 4 days.	Nephritis.	Recovery
9	M	7 yrs.	a days.	3 days.	Tube in 3½ days.		Recovery
10	M	2 yrs. 3 mo.	24 hrs.	4 days.	Tube in 6 days.	In this case there was no membrane visible in fauces, but as stenosis was marked, although the diagnosis of diphtheria was questionable, a tube was introduced. At the end of 6 days tube extracted, and followed by paralysis of lower extremities.	distinct of
11	M	16 mo.	12 hrs.	2 days.	Tube in 5 days, after 3 hours reinserted for 43/2 days.	Severe diarrhea.	Recovery
12	M	6 yrs.	2 days.	2 days.	Tube in 24 hours.	Pneumonia at time of tubage.	Death
13	M	5 yrs.	12 hrs.	3 days.	Tube in 4 days.	Nephritis.	Recovery
14	F	4 yrs.	10 hrs.	2 days.	Tube in 6 days.		Recovery
15	M	2 yrs. 11 mo.	12 hrs.	24 hrs.	Tube in 24 hours, coughed out and larger size introduced for 5 days.		Recovery
16	F	1 yr. 7 mo.	8 hrs.	2 days.	Tube in 3 days, after 18 hours reintroduced for 4 days.		Recovery
17	F	3 yrs. 4 mo.	22 hrs.	3 days.	Tube in 5 days, after 11/2 hours reintroduced for 6 days.		Recovery
18	F	2 yrs. 1 mo.	4 days.	5 days.	· Tube in 18 hours.	Paralysis of heart. Refused nourishment and tube extracted.	Death
19	M	II yrs.	ı day.	3 days.	Tube in 23/2 days.	Paralysis of constriction of pharynx.	Recovery
20	F	4 yrs. 7 mo.	12 hrs.	21/4 days.	Tube in 6 days.	Nephritis.	Recovery
21	F	6 yrs.	6 hrs.	24 hrs.	Tube in 53/2 days.	Paralysis of constriction of pharynx.	Recovery
22	M	4 yrs.	24 hrs.	3 days.	Tube in 5 days, after 6 hours reintroduced for 5 days.		Recovery
23	M	8 yrs.	a days.	2 days.	Tube in 6 days.	ispedinijasilina, sad iistopo	Recovery
24	F	3 yrs. 6 mo.	12 hrs.	4 days.	Tube in 5 days, after 12 hours reintroduced for 4 days.	Severe hemorrhage from nose.	Recovery
25	F	2 yrs. 7 mo.	12 hrs.	12 hrs.	Tube in 6½ days.	Nephritis.	Recovery

the amount of membrane visible at the point of infection-generally some part of the upper respiratory tract. The mildest cases, clinically, not to be diagnosed diphtheria, are sometimes followed by grave, if not fatal complications, as in one of the cases about to be reported where the respiratory functions were, for a time, practically abolished, only again to be restored by heroic therapeutic measures; and still another where there was no membrane at any time visible, yet followed by complete paralysis of the lower extremities. This is not an uncommon occurrence. Jacobi states: "Thus there is no case of diph theria-beyond, perhaps, those of the mild tonsillar form-but ought to make us anxious and afraid. Indeed, there is no safety and no positive prognosis until the patient is quite recovered, and even advanced beyond the period in which paralysis may develop.

The keynote of the situation lies practically in the treatment following the introduction of the tube. At this point a brief description of the technic and instruments required for the operation will not be amiss.

The instruments now almost universally used are those of O'Dwyer, the workings of which need not be here described. All that may be said is that it is better to use the old extractor rather than the later invention, which, to lessen the difficulty of extraction, causes a metal hook to be held on the tip of the index finger by a string attached to a ball held in the palm of the hand, but unfortunately necessitates a bridge of wire across the face of the tube. This method, though greatly lessening the difficulty of extraction, increases the likelihood of aspiration pneumonia by preventing the epiglottis from coming in as close contact with the face of the tube as it might if this were not the case.

In performing the operation of intubation the child is placed upon the lap of the nurse or assistant, wrapped in a blanket, and the arms secured by the nurse holding the elbows so as not to interfere with the respiratory movements.

The patient's head is secured by the assistant, and the position " " of the head and body should be as if he were hung from the top of the head," and this position should not be deviated from during the insertion of the tube. The mouth-gag is then placed in position, and the operator standing directly in front of his patient, passes the left index finger down the side of the mouth over the

posterior portion of the tongue, hugging closely the right lateral wall of the pharynx until he feels the glosso-epiglottic fold. The finger is then swept toward the median line. By this motion the epiglottis is thrown forward. The same finger is then slid slightly backward until the tip comes in contact with the rima-glottidis, the palmar surface of which holds the epiglottis firmly forward. The introducing instrument, holding the tube, is now passed down in the median line, swept over the posterior portion of the tongue, until the tip of the tube comes in contact with the finger. The handle of the instrument is then raised so as to prevent the tube being carried into the esophageal opening. The tube is then pushed into the larynx, the trigger is pressed forward, and the obturator released. Pressure should then be made upon the tube with the finger so as to sink it well into the larynx. As soon as the obturator is removed there is usually a violent respiratory effort, which is accompanied by a gush of mucus or membrane from the tube, after which the breathing is usually satisfactorily established. If by mistake the tube has been pushed into the esophagus it should then be immediately withdrawn by the silken loop attached to it, and another attempt made to introduce it into the larynx. The feeding, after the introduction of the tube, should be of liquid consistency, and the patient fed in the most comfortable position possible, which is the one that he will most naturally assume. The reason for this is that no matter what position the patient be placed in, the act of swallowing remains the same, and if placed in an abnormal one, namely in the frequently insisted upon reclining posture, the food, instead of being faciliated in its passage from the mouth into the stomach, is delayed.

The reason liquids are the best is two-fold: First, they are more readily swallowed, and if perchance should accidentally gain entrance through an imperfectly closed glottis, will be more likely to be expelled than a solid particle. The second reason is a physiological one. To quote Foster: "When the substance swallowed is liquid, the movement of the back part of the tongue may be sufficient, not merely to introduce the food into the grasp of the constriction of the pharynx, but to propel it rapidly—to shoot it in fact—along the lax esophagus before the muscles of that organ have time to contract."

In regard to the medicinal treatment accompanying tubage-stimulants, both alcoholic and

^{1&}quot; Text-book of Physiology " (Revised Edition), Foster, 1895.

 [&]quot;Therapeutics of Infancy and Childhood," 1896, p. 189.
 Waxham, Medical Record, 1887.
 This method will materially aid in locating the epiglottis, especially. cially where the patient is young or the edema great.

drugs, such as strychnin and digitalis, should be given in sufficient doses from the beginning. If this be done fewer cases of cardiac insufficiency will occur. Mercuric chlorid is the indispensable drug and should be used in every case. Frequent spraying with a two per cent. solution of papayotin, or a 5000 solution of mercuric chlorid, is indicated. This measure not only cleanses the fauces but also relieves the dryness greatly complained of by the patient.

Tincture of ferri-chlorid, although its action upon the blood is not definitely known, is to be given in sufficiently large doses.

The time at which the tube is to be withdrawn depends upon the age of patient, and the severity of the attack. If the patient is young it is better to allow the tube to remain in five or six days. It should then be removed, and if necessity requires, reintroduced. If the patient is older, and the temperature tends to reach the normal, and the symptoms of the disease are rapidly disappearing, the tube may be taken out as early as the second or third day.

In the extraction of the tube the original instruments devised for the purpose should be used. The silken thread should always be removed after the introduction, since it may interfere with the perfect closure of the glottis; or if the case be a virulent one, and ulceration caused by the irritation at the angle of the mouth occur, it will most likely be infected by the disease; and lastly, it may be pulled out during the patient's struggles.

GOOD RESULTS FOLLOWING URETHRAL RESECTION. 1

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WITHIN the last year I have encountered two instances in which, owing to the extensive destruction of the urethral canal, I had originally expected to be finally obliged to establish an artificial route, either perineal or hypogastric, in order to insure a satisfactory and permanent outlet for the vesical contents. In both of these cases, however, by resorting to a very radical and extensive excision of the diseased urethral areas, including also the surrounding cicatrices, I have been able to restore the normal urinary function and to apparently leave the urethral canals of permanently good caliber. In one of these cases the excised tissue included the entire bulbous urethra, fully

an inch of the penile urethra anterior to the bulb. and the anterior half inch of the membranous urethra. In the other case, an inch and threequarters of the urethra was removed. In this second case the tissue removed included the bulbous urethra and the anterior portion of the membranous urethra. The first case was operated on about one year ago, and has been under observation ever since. Although the urethra is somewhat tortuous, it admits freely an 18 American, and shows no special tendency to contract. The second case, done about ten months ago, admitted a 17 American easily four months after the operation. Since that time I have not had an opportunity personally to examine the patient, although I have heard from him that he was all right and in no apparent need of surgical attention.

Before proceeding to give a history of these two cases, a brief review of this surgical procedure will be of interest. In 1882 König was apparently the first one to advocate resection of the urethra. He reported a favorable result from resecting a traumatic stricture of the membranous urethra. The free edges of the urethra were dissected up and brought into apposition by sutures. König supposed, and Heusner also, who, it appears, independently of him reported a similar case a few years afterward, that the success of the operation lay in the healing together by primary union of the cut edges of the urethra. Consequently the operation of resection was supposed to be applicable only to such cases of stricture of the membranous urethra as involved a short portion of its length and as would consequently admit of the cut edges being brought together by suture. Acting on this idea, Wölfler, a few years afterward, resected for traumatic stricture of the membranous urethra a greater section of the canal than would allow of adjustment in apposition by suture of the cut edges of the urethra. To fill up the gap, this author grafted in the necessary amount of mucous membrane taken from a guinea-pig and sutured this foreign membrane to the cut edges of the urethra. He reported a good result. Keyes, inspired by Wölfler's example, grafted a piece of mucous membrane taken from the foreskin of the individual into the space in the membranous urethra occupied by the strictured area. He did not, however, suture this bit of graft to the posterior urethral end. A good result followed this operation. Since then Sapiejko reports that in numerous similar cases he has obtained good results by filling in the space occupied by the stricture with the mucous membrane taken from guineapigs, fowls, dogs, and monkeys. In the light of

¹ Read at the meeting of the American Association of Genito-Urinary Surgeons, June, 1896.

subsequent events, however, it seems to me that the good results reported from these cases of urethral resection combined with grafts of various kinds of mucous membrane should be attributed entirely to the resection of the urethra and not at all, as these authors contend, to the grafts. Indeed, one is at liberty to doubt the taking of the grafts in any of these cases, since the only proof of any real weight presented in substantiation of such an hypothesis lies in the fact that the final results in these operations were satisfactory. The same, however, can now be said of simple resection without any attempt at grafting and without bringing the cut urethral edges into apposition by suture. Among other arguments to be advanced against the probable taking of these grafts are the absence of the general conditions favorable to the success of such a procedure, and also the inability to satisfactorily inspect the part involved after the operation. The chief conditions unfavorable to success are as follows: The resected membranous urethra lies in the bottom of a deep, V-shaped space. From the nature of the tissues constituting the angle of this space, it is impossible to so adjust them to those of the under surface of the graft that they should lie in undisturbed apposition. As a result of bleeding or serous oozing and of the contraction of the elastic walls of the V-shaped space, the graft is puckered up and pushed out from the apex of the angle, leaving a triangular space filled with serum or clot between the tissues, which should have been kept in close connection. It may be claimed that a catheter tied in prevents this separation, and possibly it may, although to me it seems very improbable that such should be the case. An ocular inspection of a graft through an endoscope is only feasible after thorough healing has taken place, and at such time the appearance presented by natural cicatrization over a respected area would probably offer no special signs by which it could be distinguished from the appearance which might be due to the taking of a graft. In 1892 Horteloup, Guyon, Albarran, Jouon, Vignard, Wartel, and other French surgeons all announced themselves in favor of resecting areas of the membranous urethra too extensive to admit of the approximation of the cut edges and of leaving the space between these edges to granulate. Hourteloup, in his report, announced a case of cure in which, four years before, he had removed four centimeters of the membranous urethra. At that time most of these authors held that resection was applicable only to traumatic strictures of the deep urethra. Guyon and Albarran, however,

held that contractile and rebellious strictures of gonorrheal origin could be treated in this manner. In one of the cases reported by Wartel a penile stricture, three centimeters in length, was excised. This is the first report that I find of excision of a penile stricture. Within the last year or so, however, numerous cases have been reported in which considerable portions of the penile urethra have been resected with good results. As a striking example among these cases of resection of the penile urethra in which an especially good result was obtained, may be mentioned the case recently reported by Chismore, of San Francisco. The usual procedure advocated by these French authors after excising the stricture and the surrounding inodular tissue is to introduce a "Sonde à demeure," and then to unite the perineal or penile tissues by several tiers of sutures. If the perineal structures heal by first intention, a better result is naturally expected than where suppuration is encountered.

As an after-treatment, I have adopted in my cases a method which has the advantages of the Sonde à demeure, without its disadvantages. The advantages of the Sonde à demeure in resection involving an extensive area of the deep urethra are that it acts as a splint, as it were, in steadying the cut urethral ends and in affording a firm cylindrical body about which the perineal tissues may be brought and molded so that in healing they may be made to conform as nearly as may be to the shape of the new urethra. The disadvantages of this instrument are that it cannot be removed if its presence in the bladder causes tenesmus. If vesical tenesmus be violently excited, then urinary infiltration into and suppuration of the perineal tissues may result. If the Sonde à demeure is once removed to rest the bladder, it cannot be replaced, and in such an event the only thing to do in case firm union of tissues has not taken place is to open anew the perineal wound.

The method I use is as follows: After the resection has been accomplished I make a very low cut, dividing the deepest portion of the membranous urethra, the lowest portion of the perineal structures, and some of the circular fibers of the sphincter ani. Along this low level route I place a soft rubber vesical drainage-tube of large caliber. I then introduce along the urethra a soft catheter of such a caliber that it can be retained with comfort. This catheter extends from the meatus along the penile, the resected, and the deep urethra, down to the big perineal tube, and about it the perineal structures are carefully sutured. This

urethral tube is kept in for a week or ten days, as the case may be. The big perineal tube can be withdrawn and replaced, if needs be, without in the least disturbing the urethral tube.

CASE I .- Forty-five years old. In early life had had numerous attacks of gonorrhea. Ten years ago first began to suffer from obstruction to urination, due to stricture. Shortly after that he was seized with an attack of retention of urine, and was relieved by instruments. Some time after this, his stricture recontracting, he again had retention, complicated with perineal extravasation. This was followed by abscesses and perineal fistulæ. Numerous inadequate attempts had since been made to relieve his condition by instrumentation and cutting and draining the perineal abscesses. When I first saw him, his perineum and his whole scrotum was one mass of induration, riddled with fistulæ. The tumefaction caused by the induration prevented him from sitting upright. No urine passed or had passed for a considerable interval along the penile urethra, but leaked its way constantly out through the numerous fistulæ. After improving his gen-eral condition as much as possible, I etherized him. With whalebone filiform bougies the chief fistulous tracts were located. One of these instruments was made to pass along a fistulous tract into the bladder. With the bougies for landmarks, the patient was placed in the lithotomy position and a long, straight, median incision made, extending from the penile urethra in front of the scrotum down to and partially including the sphincter ani. The cut split the scrotum, a testicle lying on either side of it. The whole length of the diseased urethra was exposed. The entire bulbous urethra, an inch of the penile urethra anterior to the bulb, and the anterior half inch of the membranous urethra were found to be in a state of thorough disorganization. Fistulous tracts extended entirely around that portion of the urethra, showing that the burrowing pus had dissected the canal free from its adjacent tissues, leaving that space to be filled in with dense cicatrix. Besides burrowing about the urethra, purulent extravasations had invaded the tissues about the groin and the rectum. From the median incision, radiating incisions were made, laying open all these adjacent pockets. The diseased urethra existed as a hard fibrous cord, perforated in numerous places, and so disorganized and contracted that, on being split open by a longitudinal incision, little remained to mark the course of the urethral canal. This disorganized urethra was accordingly cut out, and the cicatricial nodules from the perineum and scrotum were also removed. In fact, so much tissue was removed from the perineum that in one place little for covering was left save the skin and subcutaneous tissues. A perineal vesical tube and a urethral tube were then put in place in the manner I have already described, and the perineum and scrotum

were carefully sutured about the urethral tube. The latter tube was kept in place for ten days and the perineal tube for nearly three weeks. The perineal wound healed by first intention, except in the one spot where little save the skin and the subcutaneous tissues had been left. In this spot a fistulous opening remained for a time, but at the end of six weeks it closed solidly and permanently. At about the same time also the perineal tract along which the vesical tube passed closed. Now the patient is perfectly comfortable, one year after the operation, takes an 18 American sound and urinates normally. To the feel, the perineum and scrotum are soft and natural.

Case II .- A vigorous man, thirty-six years old, had had trouble from a deep urethral stricture for about a year. This stricture had apparently originated from a preceding gonorrhea, Periodically he had been a heavy drinker. During one of his sprees he was seized with retention of urine. His bladder became overdistended and extravasation took place. I first saw the patient at the Post-Graduate Hospital, where he had been brought about four days after the extravasation had first occurred. During all this time he had not been relieved. His condition. was at that time shocking. His temperature was 105°. He was cyanozed. His pulse was irregular and hardly countable. The evidences of extravasation were extreme. His scrotum was about the size of his head. The tissues of the thighs and lower abdomen were much swollen, and hard and porky to the feel. The perineum was very much infiltrated. There was no urine dribbling at the time from the penis. Owing to his condition, hardly more than a smell of ether was considered necessary or advisable. I then made one deep, long cut in the median line along the scrotum and perineum, guarding myself as well as possible from the inevitable outflow of extravasated fluid, which shot out several feet the instant it was liberated. I then made a number of superficial cuts in the scrotum to aid in the drainage. The perineal wound was next examined. On retracting the cutaneous tissues, the whole perineum presented the appearance of a vast slough, rendering it impossible to detect any landmarks. I considered it unwise to try to enter the bladder through the perineum, and it was to that decision that my patient owed his life. At that time I did not, of course, know of the existence of an extensive extravasation between the layers of the deep pelvic fascia, which a cut into the bladder through the perineum would not have relieved. I simply thought that if I entered the bladder through the perineum I should have to do so by plunging the knife through in the median line, thereby tapping the neck of the bladder. If I had tried in a careful way to find the urethra and to enter it back of the stricture, my patient would have been dead long before the completion of the operation, even had it been possible at the time to have found the urethra. I was also fear-

ful of doing damage by plunging the knife unguided through the perineal region. Another very forcible reason which presented itself to me against the perineal opening was that, owing to the extreme slough, I suspected that there had also been great destruction of the urethra, and I felt that, if the patient survived, the case would be one in which retrograde catheterization would eventually be most useful in attempting to restore the urethra and in that judgment I was also correct. I accordingly turned my attention from the perineum to the hypogastrium. I made a longitudinal suprapubic incision, opened the bladder, and gave vent to a great accumulation of clear urine. After the bladder had about two-thirds emptied itself, there came a sudden gush of foul, purulent material, which I discovered to be from an extravasation between the layers of the deep pelvic fascia. After most of this foul extravasation had flowed out, I was able to introduce my finger along the channel from which it came. It burst into the lower portion of the space of Retzius from the right side. A catheter was introduced into the cavity occupied by this extravasation and the place was flushed out with sterilized water. The patient was then put to bed. He rallied quickly, and at the end of two weeks, his condition being good and all the sloughs having come away, I successfully undertook the secondary operation of restoring the urethra. In the two weeks elapsing between the first and second operations apparently no urine had found its way through the perineal wound, and the most careful search now failed to disclose the remains of the urethra in the perineal wound. A catheter introduced at the meatus was arrested by a stricture at the upper margin of the perineal wound, but after a little manipulation it passed into the perineal space, showing a complete destruction of the urethra. That portion of the canal had evidently come away with the slough. A suitable instrument was then passed through the suprapubic cut and retrograde catheterization employed. The position of the posterior stump of the urethra was in this way located. The end of the catheter was cut down upon through a firm mass of cicatrix. The urethra ends were next dissected free from all cicatrices. A tube was passed along the urethra, uniting these cut ends, and a low level perineal vesical drainage-tube also introduced. The perineal wound was brought together loosely and left to granulate about the urethral tube. A small, soft rubber tube was introduced through the perineal tissues in order to drain the perineal space. The tubes were finally removed as in the first The suprapubic and perineal wounds all promptly healed, and the urine then came wholly The last time I saw him, four by the urethra. months afterward, he was passing a good stream; was in good health, and a 17 American steel sound passed easily into his bladder. Since that time, as already stated, I have heard that his condition was perfectly satisfactory to himself.

Besides the result obtained in this case from the urethral resection, there are points in connection with its management which deserve special emphasis, and which very likely are original. In this latter connection I refer especially to the employment of suprapubic cystotomy in a case of extensive extravasation of urine from vesical over-distension, not only to drain the bladder, but also as a means of reaching and relieving a deep pelvic extravasation, should such exist. I also doubt if a suprapubic cystotomy has been previously performed, one of the purposes for which was to allow at a future time, of the accomplishment of a retrograde catheterization in connection with a plastic operation on the urethra.

SOME OBSERVATIONS REGARDING MALARIA AS IT OCCURS IN LOUISIANA. ALSO QUININ AS A REMEDIAL AGENT IN THE DISEASE.

By C. D. SIMMONS, M.D., of dutch town, La.

THERE has been a great deal of discussion among the physicians of Louisiana relative to quinin as a remedy in the treatment of what is usually termed "Malarial Fever." In the writing of this paper it is not my intention to combat any of the arguments that have been put forth from time to time, to explain the unknown in this field, but simply to record a few facts, gathered along my pathway, that have proven to be rich in malarial findings.

It will be well at this point to mention some of the fevers simulating malaria, and in fact often connected with it, viz: Spring catarrhal fever, typhoid, thermo-malarial, thermic, and puerperal fever.

- 1. Spring catarrhal fever is of frequent occurrence in my practice, and though it seems to be largely a disease of childhood, it is not always confined to the young, but is met with from the cradle to the grave. Here in this locality I am satisfied that malaria plays an important part in this trouble.
- 2. Typhoid fever, as met with in the lowlands, is nearly always modified by malarial poisoning. The word "typho-malaria" is delusive, and would lead us to believe that we have a mixed or hybrid fever to contend with. Malaria, like the poor, is with us always, and until we fasten this fact upon our minds and take it with us in our daily rounds, little good can come from any line of study. As a rule, with few exceptions malaria complicates all diseases in the swamp lands of Louisiana, and it does this by being present in the blood for

months or years, before some other disease breaks the powers of resistance that have held it in abeyance.

- 3. I am confident that there is a fever prevalent here that we may conveniently call thermomalaria. It develops very rapidly during the first hot days of spring, and is very amenable to quinin.
- 4. Thermic fever has been studied by Drs. John Guiteras and George M. Sternberg, during their stay in the South. I have met with a great many instances of this trouble in my practice. This fever is no doubt due to the extreme heat of our climate, which has a constant tendency to throw out of balance the heat regulating centers. Cold to the head, with the bromids and phenacetin, is our best treatment. Quinin adds to the discomfort of the patient.
- 5. Puerperal fever has been often mistaken for malaria, but as our knowledge in this field is clearer now, mistakes will not be so frequent. The uterine douche will take the place of quinin in a greater number of instances than heretofore.
- 6. Malaria, pure and simple, is of frequent occurrence, the tertian type being in the majority, and, as a rule, the disease will stop at this stage if properly treated. When a case of malaria proves fatal, it is nearly always from neglect. The people generally become accustomed to the chill and fever of acute malaria, considering them matters of but little importance, and losing valuable time by taking "Patent Chill-cure," or at most, one or two small doses of quinin. The practice of every physician in this highly malarious district could testify to these neglected cases. Many lives are lost in this way. This will at once account for the large number of these cases that drift into the septenary form of the malady. It is in these neglected cases that we find such immense splenic enlargement. Last year, in a boy of eleven summers, I found a spleen that measured six inches wide by nine inches long, and upon manipulation it seemed to be nearly as thick as it was wide.

How does quinin act to prevent a return of the paroxysms of malaria? Experimental chemists tell us that if we mix tincture of guaiacum with ozonized turpentine, and then add blood to the mixture, the result is a beautiful blue color. This reaction is due to the oxidation of the guaiacum by the active oxygen or ozone found in the blood. If we previously add one part of quinin to twenty thousand of blood, the blue reaction just described is delayed, or does not occur at all. From this experiment we find that quinin has a powerful affinity for active oxygen. So when the drug en-

ters the circulation it is of necessity attracted to the red blood-corpuscles, setting up a protective atmosphere around those life-giving bodies, defying the entrance of plasmodium to the cell.

Let us turn away from the peculiar action of quinin just cited, to a brief study of the parasite that causes the disease. A certain amount of heat, moisture, and oxygen, are necessary to the life of the parasite. For several years I have noticed that the drinking of water from certain wells caused many cases of malaria to develop, but after the first frost no new cases would occur. Now there is but one solution to this and that is, the surface, or near it, is the true producing malarial nidus, hence the surface water, after a frost, does not carry the poison of malaria to the well-water below. From these deductions it would seem that the life of the plasmodium malaria is dependent upon oxygen, as it is found near the surface.

When the plasmodium enters the blood, it, too, like quinin, is attracted to the red cells. This peculiar action is no doubt due to the fact that the corpuscles are oxygen carriers, and thereby supply the parasite with this wonderful element. Both quinin and the parasite destroy the red cells by absorbing their contained oxygen. If quinin is given in full and frequently repeated doses, especially in young subjects, it greatly lowers the normal amount of oxygen. I have noted this effect of the drug in my own practice. By this action sighing respiration is produced, showing a want of oxygen at the base of the brain.

In conclusion, if my theory is correct, the antimalarial action of quinin is dependent on the condition of the red cells; if they are filled up with parasites, their oxygen absorbed, thinned in ranks, disabled for active duty, as we find them in chronic malarial poisoning, very little good can be expected from the use of quinin. In looking about for a remedy to fill all indications, as existing in a condition as pictured above, nothing approaches sonear an ideal drug as arsenic in the form of Fowler's solution. It is my belief that arsenic benefits these sufferers of malarial toxemia, chiefly through its direct blood-building power. I have not met with a single contraindication to the use of arsenic in these troubles, which is more than I can say of any other remedy for the disease. I often give Fowler's solution four or five times a day in threedrop doses. In this way it has a tendency to check waste, relieve engorged liver and spleen, and exhilarate the patient. Of course, as a rule, quinin is the greatest of all remedies for malaria, but in just such cases as I have described it will often fail. It is well known to physicians residing in the malarial belt that quinin often proves a powerful irritant to both the alimentary and urinary tracts. It would be a bold man that would force quinin upon a case like this, by giving it subcutaneously. We have other drugs, such, for instance, as iodin, iodid of ammonia, mercury, nux vomica, iron, the mineral acids, and phenacetin, that serve as well in time of need.

CLINICAL MEMORANDA.

REPORT OF A CASE ILLUSTRATING THE DANGERS OF FORCIBLE AND RAPID DILATATION IN THE TREATMENT OF URETHRAL STRICTURE.

> BY JAMES BECKETT, M.D., OF CHICAGO.

IN July 1894, I was called to see J. M., aged fortythree, who had been recently operated upon for urethral stricture.

The history obtained was that a few months previous to the operation, he noticed that the stream of urine was narrowed and divided, the desire to micturate becoming more and more frequent, accompanied at times with severe pain, and the quantity diminished.

In this condition he sought the advice of his physician, who arranged for an operation at the patient's home. At the time appointed, he was placed under anesthesia, and sounds ranging from a filiform bougie to a No. 18 English steel, were introduced in rapid succession.

I found the patient five days after the operation suffering from extreme vesical tenesmus, attended with the passage of only a few drops of urine; the abdomen above the pubes was brawny in appearance, boggy to the touch, and exceedingly sensitive; there was no tumor in the perineum.

On exploring the urethra, a very tight, exquisitively sensitive stricture was discovered 5½ inches from the meatus, so tight indeed that a catheter of the very smallest size could not be introduced.

Hot application (hop poultices) were applied over and above the pubes, and in the perineum, and morphia given hypodermically for the relief of pain and tenesmus; the latter, however, still continued, though in a less aggravated form. A few days later, during a violent straining effort, the patient felt "something give way," which was followed by considerable relief and the escape from the urethra of some ill-smelling matter mixed with a small quantity of urine.

The relief was only temporary, however, the tenesmus returning the following day. From this time the patient began to give evidence of severe constitutional disturbance, rigors were frequent, and delirium marked in the evening and during the night. He continued in this state for several days, passing only a few drops of urine at a time and continually straining, when one morning a fluctuating tumor was discovered which had developed during the night. It was situated about one and a half

inches below the umbilicus in the median line. This was immediately opened by a free incision, and a quart or more of urine gushed from the opening, followed by large quantities of foul-smelling pus and several sloughs.

The tenesmus was entirely relieved, the urine passing freely through the abdominal incision. But the patient was left in such a weak and debilitated condition that it was deemed best to wait sometime before proceeding farther, in order to enable him to obtain some sleep and rest, and to get him in the best possible condition for further operation; meanwhile attempts were frequently made to reach the bladder through the urethral canal, but all efforts in that direction proved futile.

It was then decided to open up the canal by perineal section. With the assistance of Drs. W. W. Barkwell and J. F. Burkholder of this city, the patient was anesthetized and placed in the lithotomy position, a Syme's staff passed down to the stricture and forced through it, an incision made into the groove of the staff commencing well in front of the stricture and extending backward about three and a half inches, laying open the urethra, including the strictured portion. The latter was composed of firm, hard cicatrical tissue about a half inch in length and was carefully dissected out. The portion of the urethra behind the stricture was very much disorganized, and after frequent attempts to reach the bladder through the wound, by enlarging the latter and cutting carefully backward in the groove of the staff, a metallic catheter was finally passed and secured. This was left in for forty-eight hours, after which the urine was allowed to drain through the perineal wound.

Recovery was fairly satisfactory; a scrotal abscess developed, and, after being freely opened and drained, healed kindly. Three sinuses were discovered communicating with the abdominal wound, which were also laid open and gave no further trouble. During the past eighteen months I have seen this case frequently. Only a few weeks ago I passed a steel sound (No. 10 English) with perfect freedom into the bladder; no instrument having been introduced for three months previously. The perineal and abdominal wounds had both entirely healed, the stream of urine was free and straight, and the patient strong and active.

It may easily be conceived how a condition as described above may be produced. A patient is anesthetized, and steel sounds of graduated sizes passed into the urethra, and forced through a hard, close stricture, the handle of the sound being depressed between the thighs each time with the intention of including the whole of the canal from meatus to bladder. The point of the sound, however, does not glide smoothly into the bladder as in the normal condition, or as easy as in a case of stricture of large caliber, but is grasped firmly by the strictured portion (according to the size of the sound), which, acting as the fulcrum, produces a very powerful leverage on depressing the handle of the sound. The point of the latter impinges forcibly each time against the anterior wall of the urethra, resulting in either perforation or such a degree of inflammation as to favor suppuration, and eventually rupture and extravasation of urine into the cellular tissue.

In the case cited, the most remarkable feature was the tendency of the urine to burrow upward toward the thorax, at no time was there any tenderness or swelling in the perineum, nor could any sense of fluctuation be felt through the rectum.

I am convinced that this method of dilating rapidly and forcibly within a short period of time, and under anesthesia, is quite frequently practised, and I have been impelled to report this particular case not in a spirit of censure, but to offer it as a plea for the more careful use of urethral sounds and for more exact discrimination between those cases suitable for dilatation, and those which require either internal or external division.

It is a difficult matter to formulate rules of differentiation in the treatment of all organic strictures, but I think the following conclusions may be quoted as being rational and conservative:

- The surgeon should carefully study the peculiarities of each individual stricture.
- Rapid dilatation should not be practised with sounds (forcible catheterization), but with a suitable dilator.
- Gradual dilatation should always be attempted, occupying a period of several days at least before proceeding to internal or external urethrotomy, or to rapid dilatation.
- 4. When a stricture is extremely sensitive and immediately recontracts after partial or full dilation, dilatation is not only useless, but absolutely harmful and should not be persisted in, with these precautions it becomes an easy matter to decide on the best mode of procedure, with the ultimate cure of the stricture in view.

The operator is enabled to grasp the situation intelligently, instead of going blindly to work with the chances very much in favor of producing some vital injury to the urethra, on discovering which, he becomes disgusted at his own recklessness, and either abandons his patient altogether or discharges him as "cured."

CHOREA AND RHEUMATISM.

By FREDERICK KRAUSS, M.D., OF PHILADELPHIA;

DISPENSARY SURGEON TO ST. MARY'S HOSPITAL; CLINICAL AS-SISTANT TO POLYCLINIC HOSPITAL.

THE relation between rheumatism and chorea is still a much disputed question. Many careful observers have concluded that there is a decided connection between these symptomatically diverse diseases. Others are convinced of the contrary.

Sir Dyce Duckworth' believes that chorea is simply another variety of rheumatism, in which the brain is affected, instead of the joints. He considers that the definition of Andrew Clark—"rheumatism of the brain"—is very appropriate.

The choreic affection, he believes, is more common in girls, because the primary establishment of menstruation produces certain disturbances in the cerebral circulation that makes the brain a weak spot, which the rheumatic poisons, in certain persons, attack, producing the phenomena called chorea.

This theory becomes more tenable when we consider

1 Wien. medicinische Blätter, zvii, 1894.

that both rheumatism and chorea are due to some systemic poison, the nature of which is not exactly known. In the one case, it acts upon the serous membranes of the joints, pleura, etc., while in the other the voluntary motor centers are apparently affected. The ventricles of the brain are serous cavities, lined by serous membranes (endothelium). The internal capsule, through which the voluntary motor fibers run, is in close proximity, especially at the knee, to the lateral ventricles, separated therefrom by the thin layers of nerve-cells, of the thalamus opticus, and the nucleus caudatus, from which fibers run to join it (the internal capsule).

Osler states that in 554 cases, which he had analyzed, 15.5 per cent. had a rheumatic family history, and in 15.8 per cent. of the cases there was a history of articular swelling. The statistics of the Committee of Collective Investigation of the British Medical Association, in a study of 439 cases, show that joint affections were present in 26 per cent. of the cases of chorea, Steiner, on the other hand, in a collection of 252 cases, found only 1.5 per cent. in which rheumatism was present. Osler further asks, "Do these articular affections of chorea belong to true rheumatism? Are they not analogous to the joint troubles of scarlet fever, puerperal fever, and gonorrhea, which no one now regards as truly rheumatic."

In view of this diversity of opinion, it may not be considered superfluous to report the following case of acute articular rheumatism and chorea, the latter occurring after a relapse of the rheumatism. This case is also of interest on account of the extensive heart lesions, which were present as a further complication.

The chorea, occurring during the endocarditis, might be explained also by the embolic theory, though no other symptoms of embolism were present. Another feature is that both the rheumatism and chorea were at first only manifested upon the right side.

J. H., girl, aged sixteen years, was attacked on March 9, 1894, with acute pain and swelling in right ankle and right wrist, and over the precordia. When seen by me next day, she was suffering from a severe attack of acute articular rheumatism, accompanied by the characteristic acid sweats. In addition, there were present mitral and aortic double murmurs and a pericarditic friction sound; marked dyspnea. On palpation over the precordia, the friction fremitus was plainly marked. Temperature 102°; pulse full and short-110 per minute. The patient was immediately placed between blankets and kept absolutely quiet. Blisters the size of a silver dollar were applied over the precordia, giving much relief from the pain. Sodium salicylate was given internally in ten-grain doses, repeated every two hours; milk diet. The patient immediately improved, the temperature on the fourth day being normal. No marked effusion could be outlined in the pericardium, though the friction murmur and fremitus had disappeared. The endocardial murmurs continued undiminished.

Fifth Day.—General condition very good. Was placed upon infusion of digitalis, potass. bicarb. and iodids.

Sixth Day.—Was taken with severe vomiting following ingestion of ham, which the patient managed to get

through an obliging relative. The stomach became retentive after the administration of bismuth subnitrate and carbolic acid. For the past four days there had been a slight epistaxis. This now increased to an alarming degree, but was soon controlled by the snuffing up the nose of a weak solution of Monsel's salt.

The patient did well until three weeks after original attack, when a slight relapse occurred. Temperature 101°; pulse 96. This soon subsided under sodium salicylate, as before.

One week later the patient was attacked with very severe right-sided unilateral chorea, in a few days becoming bilateral. Temperature was again increased, and the cardiac condition became more marked. She was put upon rapidly increasing doses of Fowler's solution.

Five weeks after the original attack another relapse of acute rheumatism occurred, in spite of all precautions in regard to hygiene, diet, and proper regulation of the bowels, etc. This attack quickly passed off, leaving the patient free from the disease to the present day.

Seventh Week.—Chorea has almost entirely disappeared. Systolic and presystolic murmurs et the apex and aortic systolic (obstruction) murmur are heard. Temperature 99°; pulse 100. No albumin in urine. Is taking forty drops of Fowler's solution per day. Slight epistaxis.

Eighth Week.—Chorea has disappeared. Reduced Fowler's solution to fifty drops per day. Patient feels well; appetite good. Temperature is normal; murmurs continued.

Several weeks after this, the patient developed a dry, hacking cough, worse in the morning. Chest examination showed bronchial breathing and dulness over the left apex. These symptoms disappeared under increasing doses of creosote and cod-liver oil.

The heart attained full compensation after a few months, the patient gaining greatly in weight. During this interval the girl's disposition was much changed, being peevish and irritable.

The epistaxis was probably a vicarious menstruation, as she had her first menses four weeks before the beginning of the epistaxis, which latter again returned four weeks later, when it was reduced in quantity, on account of the great anemia.

A CASE OF UREMIA, OPIUM POISONING, AND THERMIC FEVER.

BY THOMAS ASH CLAYTOR, M.D., OF WASHINGTON, D. C.

THE following is the history of a case admitted to the Pennsylvania Hospital during my term of service as a resident physician on the medical wards of that institution, which has seemed to me to be of sufficient interest to justify its report.

On July 20, 1893, Henry L., aged forty-five, an Englishman, formerly a sailor, was brought to the receiving ward by the police, who had found him lying in an open box-car, exposed to the full force of the midday sun. In his pocket was an empty ounce phial, labeled "Laudanum." At first glance, it seemed evident that he was

suffering from poisoning by that drug, for his pupils were contracted to a pin point, respirations sighing and twelve to the minute, face deeply cyanosed, pulse-full, but compressible, 122 to the minute, coma profound. His temperature was found to be 1054° F. A mild attack of thermic fever was then thought probable, but on closer examination a strongly urinous odor was detected on the breath, also marked edema of feet and legs. The urine obtained by catheterization showed a specific gravity of 1020, acid reaction, a trace of albumin, with an abundance of pale, dark granular and oily tube-casts. The diagnosis then made, and afterward concurred in by my chief, Dr. Morris I. Lewis, was uremia, opium poisoning, and thermic fever. As to the first two, I do not think there is any question or doubt, but as to the thermic fever, we have no positive data, except the high temperature and exposure to intense humid heat, in a close place (the day was very hot and damp).

For obvious reasons apomorphia was not suitable, nor was mustard water or any other mechanical emetic available, because of the deep coma. An attempt to introduce the stomach-tube was followed by slight emesis, but embarrassed the respirations to such an alarming degree that it was necessarily abandoned. The condition was critical, something had to be done, and that without delay, if the life of the patient was to be saved. As the cold bath answered two of the most marked indications, namely, antipyresis and respiratory stimulation, it was at once instituted. The man was placed in a cold bath, with an ice cap to his head, and the hose played upon him. At this time he was comatose, there was constant twitching of the fingers, but no general convulsions.

Examination of heart, lungs, liver, and spleen, proved negative. The reflexes were slightly exaggerated. In twenty-eight minutes his temperature was 1041° F., pulse 118, respiration 20, and he showed signs of returning consciousness. Eight minutes later he was removed from the bath. Though his temperature had been reduced and his respirations had risen to normal, the condition was very serious, cyanosis was even more marked, pulse weak and running. He was now given hypodermics of aromatic ammonia, in addition to brandy, strychnia, and digitalis, which he had received during the bath, friction was continued; atropia was used sparingly because of the uremic condition. At 4.13 P.M. (25 minutes later), respirations were becoming deeper and more regular, 21 to the minute, color improving, pulse 136, temperature 1024°. At 6 P.M. general condition was improving, temperature 1021°, pulse 134, respiration 22. He was now removed to the ward and freely stimulated with digitalis and whisky. At 10 P.M. temperature rose to 105°; there were at this time marked general convulsive movements, which prevented the accurate count of pulse and respirations, but the latter were again shallow and sighing. Patient was again plunged, reducing temperature to 1034°.

At seven the following morning he aroused sufficiently to give his name, but immediately relapsed into profound stupor. Urinous odor was very noticeable. Urine was found to contain nine per cent. of albumin by bulk, and casts granular and oily. During the day he received

iaborandi, elaterium, and croton oil, without any apparent result. At 9.30 P.M. the temperature, which had been as low as 1021°, shot up to 1052°, for which the cold bath was again tried, without effect as to reduction of temperature, but with marked revival from the coma. He then vomited, and shortly after 12 o'clock midnight, had a free evacuation, and was quiet the rest of the night, with a gradual fall of temperature to 100%. The next morning (second day from onset) there was a marked improvement, the patient was perfectly conscious, and gave this account of himself: That he had for some time past been suffering from headache, with dizziness and dimness of vision, had been admitted to one of the large hospitals of the city, but was discharged as having nothing the matter with him; became melancholic, had delusions of persecution, and took an ounce of laudanum with suicidal intent.

On July 22d, (fourth day from onset) though bright and cheerful, was not rational. The temperature fluctuated until the 27th, (ninth day from onset) after which it remained normal. Did not regain mental balance permanently until August 2d (fifteenth day from onset). Though his recovery was slow, and hindered by a mild attack of brenchitis, he gradually improved, and at the time of his discharge, September 15th, was apparently well, except for a trace of albumin and a few casts, which continued to be present in the urine.

The above history naturally suggests the following questions: Was the high temperature, in part at least, thermic fever, or was it due wholly to the uremic poison? Was the uremic attack brought on, or in part hastened by the large dose of opium?

The first brings us to the consideration of the temperature in uremia, upon which opinions seem to differ. According to Labadie-Lagrave 1 reduction of the temperature below the normal in uremia was noted by Kien (1865). Roberts (1868), Hertz, Bilroth, Hutchinson (1870); but Bournville (in 1872 and 1873) was the first who gave himself to a minute study of the symptoms of uremia, and he came to the conclusion that, except in puerperal eclampsia, where the temperature reached 104° to 105.8°, the body heat was lowered. In 1875 Béhier, Lionville, Lacombe, and Hanot, confirmed this view. However, it has been proven more recently that if it is true that in chronic uremia, there is reduction of temperature on the contrary in acute cases, one observes often an elevation, more or less great. Numerous cases have been reported where the temperature reaches 104° F. Jaccoud states that in the common forms of uremia the temperature sometimes remains normal, but more frequently it rises to 102.2° F. or higher. Such was the case in transitory attacks, which ended in recovery; on the contrary, in fatal uremia, the temperature was nearly always lowered, the underwent an ascension high and rapid, or fell to 95° F. Bartels claimed a usual rise in temperature in acute uremia. In case of convulsions it may reach 106° or 108° F. This is seen especially as a terminal rise in cases which have an unfortunate issue. On the other hand, there may be a great reduction, even to 93° or 91° F. This occurs most frequently in cases which end in deep coma, without marked symptoms of

motor irritation. Delafield ("American Text-book") claims a rise of temperature above normal. Osler 1 says the temperature is sometimes elevated, but more often it is depressed, and may sink rapidly after the attack. Hughes and Carter state that the temperature is not a fixed symptom. It may be normal or above or below. High temperature more common in parenchymatous cases. In an analysis of forty cases of uremia, pure and simple, the temperature was found to be rather more often below than above normal, the highest being 104.3° and 103.8° F., few above 100° or 101° F.

I am told by Dr. Joseph M. Spellissy, who had the care of nearly one hundred cases of thermic fever at the Pennsylvania Hospital during the summer of 1892, "that a secondary rise within three or four hours after a primary temperature of 109° or more, which has been reduced to 100°, is usual. A second application of cold reduces this hyperpyrexia to moderate fever, lasting a few days. A secondary rise coming on after twenty-four hours from onset, and primary treatment, is the signal of a beginning complication or sequel."

From the above it may be seen that the high temperature, both primary and secondary, may be attributed to uremia alone, at the same time, in view of the fact, that the highest point was reached before there had been any convulsive seizure, and the recovery of the patient, together with the prolonged exposure to intense moist heat, it seems possible that the hyperpyrexia was in part, at least, due to thermic fever.

The second question (was the uremic attack brought on or at least hastened by the large dose of opium?) brings us to inquire into the effect of morphia in disease of the kidneys. According to W. Eliasson, quoted by H. C. Wood, it seems to be established that morphia, at least in part, is eliminated by the kidneys; when given in large doses, morphia appears freely in the urine, but that in small doses it cannot be found, although a substance is present, giving some of the reactions of morphia, from which it is derived. Wood thinks that since in serious kidney disease, the chief channel through which they escape is choked up, opiates should be used with extreme caution. He also states that in one or two cases at the Philadelphia Hospital the administration of morphia was followed by death. Dickinson says that it is not seldom that the comatose state has come on before its time, because of the administration of opium. Labadie-Lagrave name opium among drugs to be avoided in nephritis. On the other hand Dr. A. Loomis, in 1873, advised the administration of morphia in sufficient dose to control the convulsions, claiming that at the same time it produced profuse diaphoresis, facilitated the action of cathartics and diuretics, especially digitalis. Delafield says it is safe to give opium if the arteries are contracted, but if dilated, a very little may cause poisoning and death (arteries are contracted in acute uremia and dilated in chronic. Osler advises morphia. Strümpell only in cases of diarrhea and

^{1 &}quot;Urologie Clinique et Maladies des reins."

^{1&}quot; Practice of Medicine."

"Clinical and Experimental Study of Uremia," A. J. M., etc.,

^{1804,} N. S. cviii.

1 Therapeutics, Principles and Practice."

4 "American Text-book."

vomiting. Hughes and Carter think that full doses may be used with advantage. Its effects must, however, be carefully watched, as they have seen unquestionably bad results from it, especially where uremia complicates fevers.

The majority of clinicians of the present day advise the use of morphia in uremia, at the same time, from a physiological standpoint, it is contraindicated, and while I do not question its advantageous use in moderation, an overdose is, I think, capable of doing harm, by hastening the coma, as was the case with my patient.

MEDICAL PROGRESS.

Twelve Cases of Orchotomy (Castration) for Prostatic Enlargement. - Dr. Maunsell Moullin, before the February meeting of the Harveian Society of London, reported twelve cases of orchotomy attended with generally favorable results. In two cases, both under his own care, death had taken place five and nine days respectively after operation; one death was due to cerebral hemorrhage, the other from fatty degeneration of heart. In two cases, both of which ultimately recovered, traumatic delirium in severe form came on very soon after the operation. In all twelve cases, even inclusive of that which was fatal on the fifth day, there was reported a distinct improvement as to obstruction, and in those cases which remained under observation a sufficiently long time to enable the surgeon to measure the size of the prostates, there was found an appreciable diminution in size, as measured both by urethral and rectal examinations. One case, less successful than others, was that of a patient, eighty years of age, the diminution in size when measured by the finger in the rectum was not very great, and voluntary control was not regained. But as a soft catheter passed easily, whereas before only a metal one or a bougie could be used, and that with difficulty, and as the strangury, which had resisted all previous treatment, entirely disappeared, Mr. Mansell Moullin thought the case could not be considered a failure. It was never suggested that removing an obstruction at the neck of the bladder would be able to regenerate the muscular coat, if this had been destroyed by catheterism and previous cystitis. In another case the inflammation of the bladder persisted, but this again was not the fault of the operation, for the walls contained numerous sacculi, which could not be kept empty.

Respecting the traumatic delirium in two cases, already referred to, Mr. Moullin avers that it is not due to the orchotomy, but to that tendency to delirium that obtains in elderly people after severe injuries, and may even follow the administration of an anesthetic.

Pericarditis Cured by Open Incision.—RULLIER (Arch. de med. et de pharm. Militairis, 1896, Nos. 1 and 2). A soldier suffered from serous pericarditis. Four times the pericardial cavity was tapped and the fluid withdrawn. After the fourth aspiration a solution of iodin was injected. The fluid reappeared as before. Rullier determined to treat it as a hydrocele would be treated under similar circumstances. Under cocain anesthesia, an in-

cision was made in the fourth intercostal space, and the pericardium opened and drained. The following day the serous secretion was profuse, but it rapidly diminished and the pericardial wound had closed by the fourth day. Recovery was delayed by a left-sided bronchro-pneumonia but was eventually complete.

At a meeting of the section in medicine of the Royal Academy (Ireland), Dr. O'Carroll (Lancet, May 23, 1896) read an account of a cases of suppurative pericarditis secondary to pneumonia, which had been treated by free and constant drainage. The pericardial cavity contained less and less pus, but the patient died from asthenia two months afterward. The walls of the pericardial cavity were found to be adherent everywhere but in front, where there was about a dram of pus. The puncture was made in the fourth space, a thumb's breadth internal to the line of the nipple.

THERAPEUTIC NOTES.

The Therapeutic Employment of Ovarian Tiesue.-To prevent the symptoms that often follow surgical removal of the ovaries, and also those so common at the menopause, CHROBAK (Centralblatt für Gynäkologie, 1896, No. 20, p. 521) was led to administer ovarian tissue and to practise ovarian grafting. He accordingly had prepared an extract of the ovaries of sexually active and healthy cows, and had undertaken experiments to determine the practicability of ovarian grafting. The extract was employed in six cases in which the ovaries had been removed, and in one in which, with perfectly normal genitalia, the climacteric molimina were severe. In three of the cases of the first group, in which the treatment had covered a period sufficiently long, as well as in the remaining case, distinct improvement followed. The results of the transplantation experiments are detailed by KNAUER (Centralblatt für Gynäkologie, 1896, No. 20, p. 524). It was found that not only did ovaries grafted between folds of the peritoneum, or between fascia and muscle, retain for a time, at least, their integrity, but that they also continue to exercise their functional activity, as indicated by the maturation ovisacs.

The Treatment of Cerebrospinal Meningitis with Int Baths. - Influenced by the successful results reported from the employment of hot baths in the treatment of cerebrospinal meningitis, WOLISCH (Therapeutische Monatshefte, 1896, No. 5, p. 254) was led to employ this measure in seven cases of epidemic type in children between five and ten years of age. Perfect recovery ensued in five and two terminated fatally. Of the latter, one was fulminating in character, and in the other the treatment was only imperfectly and inadequately applied. While the number of cases is too small to base a final opinion upon, the impression gained from observation of the cases was that the treatment had a favorably modifying influence upon the course of the disease. The patient is carefully placed in water at a temperature between 90.5° and 92.8° F., and hot water is gradually added until the temperature reaches 104° F., an ice-bag or Leiter's coil being applied to the head.

^{1 &}quot; Clinical and Experimental Study of Uremia," A. J. M., etc., 2894, N. S. cviii.

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SATURDAY, JULY 25, 1896.

THE CHARITIES COMMISSIONERS AND THE "DRINK CURE" AGAIN.

Our protestations against the outrage which the Charities Commissioners of this city have committed upon Bellevue Hospital and the medical profession, particularly to the physicians who comprise the Medical Board of that Hospital, by allowing the owner of a secret treatment of alcoholism to experiment with it in the wards of a public institution, have been ably seconded, we are glad to say, by the public press of this city, and particularly by the Herald, the Tribune, the Advertiser, and the Times.

The fact that the experiment which was suggested by the mayor and ordered by the Commissioners was the outcome of a carefully prepared plan by shrewd men of business, owners of the stock company whose fortunes they endeavored to bolster, has been put forward in a plain and incontrovertible way. If the Commissioners of Charities of New York City persist in the face of the revelations which have been brought to light by

the MEDICAL NEWS and the public press, in furthering the interest of this stock company, they lay themselves open to the charge of collusion with a private corporation, and to that of prostituting the privileges of their office to further personal designs.

The gentlemen who are responsible for the present therapeutic fiasco at Bellevue Hospital, whether the onus of it lies with the chief executive of this city, as the Commissioners would have us believe, or whether it rests with the Commissioners themselves have been seized with such a desire to counteract the drink habit that it amounts to an obsession. Such fanatical enthusiasm is not begotten among strictly businessmen by unalloyed motives of humanity, and to conceal the actual motives behind such attempted explanation is puerile, wilfully evasive, and ludicrously absurd.

Why, it may reasonably be asked, should the Commissioners of Charities lend themselves to the test of a substance which has nothing to commend it save the biased representations of its owners, and the commendation of an ubiquitous newspaper man who has the ear and the confidence of his honor, the Mayor, when they can satiate their furor experimentia with a substance like the Keely cure, which, until a year or two ago, was supported and advocated on grounds of personal experience by hundreds of individuals whose talents and positions entitled them to be heard with faith and respect? To be sure the Keely cure is now, practically, a thing of the past, and exists only in those recesses of our memory where things which we would forget are stowed. But before its dissolution it fulfilled the inventor's purpose; it gave him notoriety, which a few mistake for genuine fame, and it made him wealthy.

Must we go through the agonies attending the birth of another Keely cure only to find that the travail brings forth a dead issue, merely to satisfy the rudimentary aspirations of the present Charities Commissioners' board? We implore the Commissioners to spare us the chagrin and pain of bearing further witness to their rude and impotent endeavors. If they hearken not to our counsel we shall be put to the disagreeable task of pointing out to them, in detail, how they have neither the right

which they claim, nor the privilege, to which they aspire, to pursue their present course. The necessity of construing for them the simple rules which should govern their conduct so that they may be relieved of the horrible imputation of being a board of puerile dilettanti, we trust may also be spared us.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

THE study of pedagogy is coming to occupy a prominent position in the curriculum of our colleges and universities. In this direction the University of Pennsylvania, the University of Chicago, and Columbia College have made the most philosophic advances. In a popular way the association of teachers, which has just completed its session at Buffalo, shows a vigor and enterprise which promises much. We have before us a very strong article on medical pedagogy prepared during the past spring by a committee on the Association of American Colleges and though this work is incomplete, we shall look with unusual interest for the full report which may be expected in the course of another year. This is, we believe, the first effort to consider medical education from the modern pedagogic standpoint. This syllabus, as it is called was prepared at two conferences held in Chicago and Detroit during the months of February and March of the present year, and it attempts to give an outline of an ideal course of study for a medical school and some definite details as to the equipment of each department, the cost of this equipment and the method of presenting each group of medical studies.

The committee first fixed upon a unit, which was termed the recitation period. This period was assumed to consume, for classroom work and study, two and a half hours of the student's time. The minimum year in a medical school was assumed to consist of six hundred of these recitation hours, or twenty recitation periods a week for thirty weeks, and a proportionate number for schools having longer or shorter terms than thirty weeks. The committee recommends the division of the term into two semesters of three hundred recitation periods each.

Some very definite information is given on

page 6, of the syllabus to teachers preparing students for admission to medical schools.

The disposition of the course of study during the four years of six hundred recitation periods each, is given in four graphic diagrams which appeal at once to the eye. These diagrams show that the committee consider general chemistry a study which ought to be required on admission. The large amount of space given to anatomy, physiology, pathology, and the small amount of space given materia medica will not receive the immediate approval of all of our readers, nor will the relegation of the clinics to the third or fourth years exclusively, be considered wise or rational. The simple course of study of the old medical schools has hardly prepared us for the rather complex course of study recommended in this syllabus. We are at a loss also to understand why anthropometry should be introduced into the medical curriculum, and why two or three recitation periods should be given to elective students during the last three years. In regard to electives, the committee urges that all colleges allow a small margin of electives to begin in the second year, and that each college make this work cover such branches as it is able to offer in the best quality. The value of even a small proportion, say five-one hundredths, of elective work, cannot be overestimated when the resources of the school are such as to permit. Properly conducted, the electives allow a choice of work adapted to the needs or inclinations of the students.

The syllabus then discusses in detail the method of teaching anatomy, histology, physiology, and pathology, and gives a very minute account of the equipment and management of these departments. This is probably the most valuable portion of the syllabus, and if it could receive the careful consideration of our medical faculties, it would not only improve the character and quality of the laboratory work, but it would economize and systemize this very important department of our medical colleges. The portion of this syllabus for which Dr. W. S. Hall and Dr. D. H. Galloway are responsibe, is most deserving of commendation. We expect to see equally radical recommendations in the next report of this com-

mittee upon the direction, equipment, and pedagogic spirit of the more practical branches of the medical curriculum.

THE DIAGNOSTIC VALUE OF THE APPEAR-ANCE OF THE TONGUE.

ALTHOUGH there have been some clinicians who have had the temerity to assert that the appearance of the tongue gives us no information of value as to the state of the digestive apparatus or the general system, physicians almost without exception, examine this organ with considerable care in all important cases. While it may be true that when making a diagnosis, too much importance should not be attached to this organ, it is also a fact that he who ignores it, deliberately puts aside a diagnostic aid of no little significance.

The three conditions which we should note in examining this organ are its coating, its movement, and its shape. The coating, which upon the posterior part of the organ is smooth, pasty, and yellow, nearly always indicates a condition of hepatic torpor or biliousness, or if it be white and rather dry and rough, this coating may, in an adult, point to the excessive use of milk. Again, every one with experience knows that the tongue is one of the most efficient aids to diagnosis that we have in the earliest stages of enteric fever, when it appears rather more narrow than normal, with a coated center and bright red edges. Later on its slow projection and retraction on the demand of the physician indicates clearly the degree of mental hebetude and the physical depression of the patient. The coating of the tongue in enteric fever, which is very heavy and discolored if the mouth is not well cleansed by the nurse, shows the perversion of salivary secretion and epithelial growth; and the lips and teeth, covered by sordes, indicate that the patient breathes through his mouth and fails to move his tongue. Again, in childhood we find three conditions of the tongue of considerable diagnostic import. One of these is the broad and flabby tongue seen in the state, called by Eustace Smith, "mucous disease," in which all the mucous membranes of the body are affected by a catarrhal process. Scattered through the

grayish coating of such a tongue, which is usually smooth and very moist, are patches in which the epithelium and the coating have been shed, leaving red spots which have an irregular outline, somewhat resembling that seen in the markings on a worm-eaten leaf.

The second of these conditions of which we have spoken, is that of the tongue in acute gastric catarrh. The coating, which is both light in weight and color, has scattered over it bright red dots which are not raised above the surface and are very numerous. Somewhat like this tongue is the so-called "strawberry tongue" of scarlet fever, in which the red fungiform papillæ project above the coating.

In advanced exhausting disease, such as diabetes or tuberculosis of the lungs, or abdominal viscera, the tongue often becomes narrow, hard and pointed, forming what is called a "parrot tongue," a state of this organ which speaks ill for the patient's recovery. In all grave fevers, a moist tongue is a hopeful sign, and a dry tongue an evil omen.

Unilateral coating of the tongue may be due to a decayed or ragged tooth, or to a disordered function of the second division of the fifth nerve.

Discoloration of the tongue may be due to bismuth or iron when the color will be black; to laudanum, chocolate, or tobacco, when it will be brown, and, therefore, any marked change in its appearance indicates the drug or food which the patient has swallowed.

The color of the tongue itself is also worthy of note, for it is extremely pale in the anemia of renal disease, of chlorosis and pernicious anemia, and cyanotic and blue in the advanced stages of those diseases which interfere with the proper oxidation of the blood.

Scars on the tongue, or the presence of freshly made bites of its edges, discovered by the patient on arising from bed, may indicate the unrecognized presence of a nocturnal epilepsy; an ulceration, if it be single, may be due to a chancre or epithelioma, in which case the cervical glands may be enlarged. Again, multiple ulcerations, if chronic, may be due to tuberculosis or to the mucous patches of syphilis. If the ulceration is

acute, it is probably an attack of ulcerative stomatitis.

The movements of the tongue are also worthy of note. If paralyzed from an attack of hemiplegia, we will find that it is protruded toward the paralyzed side, and it may become immobile in glosso-labio-pharyngeal paralysis. Tremors of the tongue not only are seen in the late stages of exhausting diseases, but in numerous nervous affections, such as bulbar paralysis and in insular sclerosis. It is also often affected by tremors in paretic dementia and chronic alcoholism. Finally spasm of the tongue may occur, generally as a manifestation of hysteria.

H. A. HARE, M.D.

ECHOES AND NEWS.

Smallpox at Gloucester. — Since the beginning of the present epidemic, 1995 cases of smallpox have occurred at Gloucester, England. A few cases are still reported each week, as well as an occasional death.

A Resignation.—Dr. Mazyck P. Ravenel has resigned the position of bacteriologist to the State of New Jersey. He will shortly leave Princeton and return to Philadelphia, where he will act as director of the laboratory for the Pennsylvania Live Stock Commission.

Mr. Lawson Tait and the British Medical Journal.— From indications that seem to abound in England at the present time, Mr. Tait is going to unroll a large bundle of discord at the approaching meeting of the British Medical Association. A strong enemity has existed between him and Mr. Ernest Hart, the editor of the journal, for a number of years.

Venereal Disease in the British Army in India.—According to a recent report made by the Sanitary Commissioner with the Indian Government, the British Army in India suffers more from this class of diseases than any army now in existence. During 1894, an average of over three thousand soldiers were constantly disabled from this cause alone.

The New York Post-Graduate.—The fifteenth annual announcement of the New York Post-Graduate Medical School and Hospital has just been issued. Five hundred and forty-two physicians from all over this continent have recorded their names at the institution during the past year. More than one thousand operations were performed in the Hospital, while nearly twenty thousand patients were treated in the outdoor department.

The Views of Professor Langerhaus.—Since the report of the investigation regarding the unfortunate death of his child after an injection of diphtheria antitoxin, Professor Langerhaus has published a letter in the Berliner klinische Wochenschrift in which he asserts his adherence to his original views concerning the death.

Instructors for the Blind.—The American Association of Instructors of the Blind met in Pittsburg on the 14th instant. Many thoughtful and interesting papers were read. It is a matter of surprise to note that one essayist deprecated the idea of teaching music to the blind, because, he believed, the musical talent possessed by them was greatly inferior to that of other people, and hence the time thus occupied was to a degree wasted.

Pathology by Telegraph.—An English exchange takes occasion to point out the inaccuracies of telegraphic reports of scientific news, by which great injustice is often done scientific investigators by presenting their work in a ridiculous light. An instance is given of the New York agency reporting a cure for acute mania, which consisted in the withdrawal of four ounces of cerebrospinal fluid by lumbar puncture. The comments were not less remarkable than the statement.

Beriberi and Drinking Water. — The British Medical Journal gives a brief account of two epidemics of this disease occurring on board vessels whose crews were perfectly healthy until they were forced to take water from ports where beriberi was prevalent. About four or five weeks after beginning the use of this water, the disease made its appearance, this period corresponding very closely with the recognized period of incubation for the malady.

The Wilhelm Meyer Memorial.—On the authority of Dr. Felix Semon, it is announced that the sum of 20,000 marks required to erect a memorial to the late Dr. Meyer of Copenhagen, the discoverer of adenoid growths in the pharynx, has already been subscribed and the success of the undertaking is assured. It is with pride we observe that the United States has contributed a larger sum than any other single nation. The amount of relief that has been conferred by the use of Dr. Meyer's suggestion in this country alone is immeasurable.

A New Parisian Affection.—An epidemic of mumps has made its appearance in Paris, chiefly afflicting adults. The reason why this infantile malady should now attack those of mature years, in whom an invasion during childhood seems to give no immunity, is yet a mystery to the physicians.

The Protection of Blood-Brotherhood. — In the light of modern inoculation by the injection of blood from the immune, it has been suggested that it may be possible to protect African explorers by blood from the healthy natives. In the case of Stanley, it is known that he submitted to the transfusion of native blood some fifty times in the practice of the rite of blood-brotherhood, and it is not impossible that to this was due his exemption from the fatal fevers of that climate.

Silver in Surgery.—Although the ophthalmic surgeon has long recognized the efficacy of silver as an antiseptic.

Professor Credé of Dresden, has recently presented the further claims of this metal to the attention of the general surgeon. Lactate of silver is an excellent germicide, but its easy solubility (in fifteen parts of water) renders it rather dangerous as a dressing. The citrate, however, is only soluble in 3800 parts of water, and is therefore quite safe. It is found that a dilution of silver of even 1–80,000 still retains appreciable antiseptic qualities, while a solution of sublimate weaker than 1–20,000 is worthless. A novel suggestion is the use of thin sheets of metallic silver spread upon linen cloth as a protective dressing in surgery. It is claimed that even in the occurrence of suppuration, the action of the products of the bacteria produces a lactate of silver, which prevents their further development.

A Code of Medical Ethica. - To the graduating class in the medical department of the University of Pennsylvania, Dr. H. C. Wood said: "Consider every member of the profession as one of your own family, and having an inherent right to your medical services, but do not abuse this right, consider any discovery or invention you may make as belonging to the general profession; never in any way laud your own medical skill or attempt to supplant in public or private estimation one of your medical brethren; join as soon as may be the incorporated companies of your fellows for scientific and social intercourse, and for the cultivation of that professional conscience which often binds men more closely than their personal sense of right and wrong; through good and ill report, stand by members of your own profession, unless they be guilty of moral evil."-Medical Age.

Their Vocation Mistaken.—A heavily veiled woman recently asked for a private interview with the janitor of the Baltimore College of Physicians and Surgeons, in which she solicited the assistance of that institution. She stated that a man who had done her a wrong for which she wanted to be avenged, was now an invalid and in her power; and she wished a physician sent who would quickly dispatch him, after which the College could have him rapidly dissected, thus avoiding the possibility of detection. She had understood that such acts were often performed by medical colleges, and for this favor she would pay handsomely.

The New Medical School for Women in Russia.—Miss Bogolubska, a Russian women, obtained a medical education in countries outside her own. She returned to Russia after graduating from the University of Berne, but was not allowed to practise as a physician. But sick people she would care for, and set to work as a nurse. She had been born in a mining village and understood the common people. She had worked eight years, when, in the cholera of 1892, she was allowed to labor among the cholera-stricken peasants. Her labors afforded such an object-lesson that the Czar allowed her to take the Russian degree, which not only gives her the right to practise in any part of the empire, but a medical school for women, which is thronged with applicants, has been reopened,

after having been closed for political reasons, largely through this example.

The Medical News at the Johns Nophins.—In the Johns Hopkins Bulletin for May-June, is a long list of the medico-scientific publications, chiefly journals, that are available in the public and private libraries of Baltimore. Only one journal, the Archiv of Virchow, is set down as being in six libraries. The Lancet and British Medical Journal are to be found in four, while the MEDICAL NEWS is in five. No other American medical periodical, if the Index Catalogue be excepted, has a greater number of friends. The last-named publication is in six libraries. Seventeen libraries only are taken into the account. Of these, ten are the property of institutions, while seven of them belong to members of the teaching staff at the Hospital. Among the latter are Drs. Welch, Osler, Kelly, Halsted, and Hurd.

Lemuel Shattuck, the Pioneer Sanitarian of Massachusetts.

-The current number of the Boston Medical and Surgical Journal has, in its editorial columns, the following reference to one of the file-leaders in American sanitation, Mr. Lemuel Shattuck. It says: "The report of the 'Sanitary Commission of Massachusetts,' which was presented to the Legislature in 1850, has been justly characterized as 'the first great step in the sanitary work of our times,' in the United States. The report was chiefly the work of Mr. Lemuel Shattuck of Boston, chairman of the commission. 'I remember Mr. Shattuck well,' said Dr. Henry I. Bowditch, in his 'Centennial Discourse on Public Hygiene,' in 1876, 'calm in his perfect confidence in the future of preventive measures to check disease, he walked almost alone the streets of his native city, not only unsustained by the profession, but considered by most of them as an offense. . . . The public, ignorant of hygiene, treated him no better. The report fell still-born from the State printer's hands. Its recommendations were ignored.' Prominent among the more comprehensive measures urged by Lemuel Shattuck, the following may be mentioned: The establishment of a general board of health for the State; the appointment of a local board of health in every city and town; the adoption of a general and uniform system of registration of births, deaths, and marriages; the taking of a decennial census, beginning with 1855; the revision of the laws relating to coroners; the control and regulation of cemeteries by boards of health. The development of public and municipal hygiene since the Massachusetts State Board of Health and Vital Statistics was established in 1869, has followed to a striking degree the lines marked out by Lemuel Shattuck in 1849."

The Cholera Bacillus in Subjects Apparently Meatthy.—
The Cairo, Egypt, letter to the London Lancet, July 4th, contains reference to several cases of the presence of cholera bacilli in apparently healthy people. The communication is probably from the pen of Dr. Armand Ruffer, who went from England to become the chief bacteriologist to the sanitary office of the Egyptian

Government. The writer makes the following statement: "It was during the Hamburg epidemic that German observers pointed out that a man apparently well and at his usual vocations might yet contain the comma bacilli in his intestines and be a potent means for spreading the disease. Several cases confirmatory to this have been seen in Cairo this month, and there are now two men in one of the cholera hospitals who were sent there on suspicion from different villages, because each of them was seen to vomit once by a native medical man searching for cholera. They both looked extremely well, and complained bitterly at having been brought to the hospital among a lot of dying folk. Both denied all diarrhea and previous vomiting, but the stools showed unmistakable bacilli, and continued in both cases to show them a week after admission to hospital. There are many things yet to be learned about this fell disease."

SOCIETY PROCEEDINGS.

ONE HUNDRED AND FIFTEENTH ANNIVER-SARY OF THE MASSACHUSETTS MEDI-CAL SOCIETY, HELD IN BOSTON, JUNE 9 AND 10, 1896.

(Concluded.)

C. E. EDSON, M.D., of Roxbury, read a paper upon THE PULMONARY INVALID IN COLORADO.

He said that a short distance on the eastern slope of the mountains, in the "invalid belt," meant a great difference in the climatic conditions. This was particularly true of the neighborhood of Colorado Springs. It was evident, therefore, that it did not suffice to send a person simply "to Colorado Springs." A most important point was to have the patient under constant and proper medical supervision at Colorado, for on arrival there the fight had only just begun. The City of Denver is often smoky, and a city anywhere is not a desirable place for the pulmonary invalid. East and west of the city the atmosphere is quite clear, and the elevation one thousand feet less than that of the Springs, and much more comfortable to many invalids. Montclair, University Park, and Berkley are suitable locations. Outdoor life in Colorado, he said, did not necessitate "roughing it," and should not do that. At first there is almost a magical gain in weight, but the bronzed face and the appearance of health do not indicate the true condition of the chest. After a relapse, often the result of imprudence, the improvement is not nearly so rapid as at first. The secret of success in Colorado is living a large part of the time in the open air, but without exercise or exertion. At first the elevation alone causes sufficient pulmonary work. After a few weeks the patient should begin by walking not more than an eighth or a quarter of a mile, steadfastly resisting the desire to do more. Care should be taken to select a house with a sheltered porch. Horseback riding is to be long deferred, and most cautiously begun, for it had proved a dire cause of hemorrhage. This same objection applies with double force to bicycling. Driving may be indulged in almost from the start, providing a jolting vehicle be not selected.

The speaker said that the warmth is all in the sunshine. Thus, he had seen the thermometer in the sun register 90° F., and at the same time, a short distance away in the shade, the thermometer would stand at 40° F. This should be borne in mind by the invalid. Pulmonary invalids should be particularly careful to avoid many of the exciting outdoor sports of the West, as well as the seductive pleasures of the smoking-rooms of the clubs. The West is essentially a man's country.

V. Y. BOWDITCH, M.D., of Boston, read a paper on THE TREATMENT OF PHTHISIS IN SANITARIA NEAR OUR HOMES,

Based upon five years' experience in the sanitarium for pulmonary diseases at Sharon, Mass. He said that, so far as he knew, this was the only institution of the kind in Massachusetts intended only for consumptives of limited means. In a previous paper, read before the Climatological Society, in Washington, D. C., in 1895, he had reported upon forty cases of consumption treated at Sharon. Ten were reported as arrested. Of twenty-four treated in the last two years, seven left the sanitarium with an arrest of the disease. Of the remaining seventeen, one was a suspicious or doubtful case. She left at the end of four months in perfect health. In twelve others, phthisis was more or less advanced in one or both lungs. Eight showed a greater or less improvement, and four did not, Five of the ten cases reported before the Climatological Society as arrested had left the sanitarium subsequently in good condition. It was impossible in a paper to convey to others the impressions made upon the clinician by actual observation of the patients. He would say, however, that the percentage of cases of arrest or cure of tuberculosis in the sanitarium had been larger than he should have expected under other circumstances. He was aware that it might be objected that in some instances the diagnosis had not been confirmed by finding the tubercle bacilli in the sputum, but it was known that the absence of bacilli was no proof of the absence of tubercular disease, and to him a certain change in the character of the percussion note, or of the respiratory murmur in the apex of the lung, associated with fever, malaise, and loss of flesh, meant infinitely more than the mere evidence of the microscope alone, whether positive or negative. Out of sixty-four cases of phthisis treated in the sanitarium in the last five years, twenty-two were classed as arrested. In two, the disease reappeared a few months later. Of the three who died, one died from some abdominal tumor, without evidence of pulmonary disease; one died of some rectal disease, and the other died of pulmonary tuberculosis, after having gone back to a mode of life which had been expressly forbidden by the medical advisers. Granting that, as Austin Flint claimed, about eleven per cent. were self-limited, he felt justified in maintaining that the results given rest on something much more than a mere self-limitation of the disease, and that they warranted the establishment of similar institutions in the vicinity of large cities or towns. He still felt convinced that fresh air, sunlight, good food, judicious exercise were the chief factors in whatever good results had been obtained. The so-called "peppermint cure" had been tried without any

special results, so far as any curative action was concerned, although in some instances it seemed to diminish the cough. Klebs' antiphthisin had been tried carefully in several cases, but with negative result. Creosote had been used, but without any special evidence of benefit, except as regards its action on digestion. He had never been able to give the large doses of creosote recommended by some physicians, owing to the disastrous effect on the stomach. Tuberculin had not been used, because of a former experience, which had led him to advise against it. Regular hours of sleep, rest in the open air, even in the coldest winter weather, regulated exercise, and pulmonary gymnastics were the important elements in the treatment. He had never seen any harm from the pneumatic cabinet, and many patients had spoken of the relief it afforded to the breathing. The usual tonics were freely given, and special attention was paid to the condition of the stomach and bowels. If patients were feverish, quiet was recommended, rather than exercise. The floors and walls of the sanitarium were wiped, not swept. A special endeavor had been made to secure for these persons occupation in the open air after they had recovered sufficiently to leave the sanitarium. He had been surprised to find how quickly these patients became contented and happy in the sanitarium.

DR. F. I. KNIGHT, in discussing the paper, said that as long as the treatment of tuberculosis was the treatment of the condition of the patient, and not of the disease specifically, the closer the medical supervision, the better the result for the patient. After an almost endless search for specifics, we had fallen back upon the treatment of the general condition of the patient. This held good as much in Colorado as at home. As had been said, the effect upon the patient of knowing his condition and of being surrounded by other pulmonary invalids was not deleterious. He called attention to the danger of allowing these patients to make merry beyond their strength, as was too often done. The moral effect of a sanitarium was desirable, as impressing upon the patient the fact that it was a serious fight for life and health. In one of the German sanitaria there was a wise motto hung on the walls: "Patients do not come here to be amused, but to get well."

ALFRED WORCESTER, M.D., of Waltham, presented a paper entitled

THE TREATMENT OF TUBERCULOSIS BY THE INJEC-TION OF TUBERCULIN AND ITS DERIVATIVES.

He said that while the finding of tubercle bacilli in the sputum was a useful confirmatory test, the absence of such bacilli did not necessarily exclude tuberculosis. Personally, he would prefer to rely upon the clinical evidence of the disease. The tuberculin test was far more reliable, for long before the general health had been affected, or the tubercle bacilli had been thrown out in the sputa, this test would reveal the presence of tuberculosis. Its value in diagnosis could be easily demonstrated; it was different regarding its therapeutic value. Perhaps the best work in this line has been done by Professor Brieger, in the Berlin Charité. In his own work he had endeavored to follow out what he had seen done there by Professor Brieger. The diagnostic value of tuberculin was due to its poison-

ous effects upon the tuberculous, when given in doses which would not prove poisonous to the non-tuberculous. It was perhaps not well known that by giving small doses of tuberculin daily to a tuberculous patient, an immunity to tuberculosis could be established in such an individual. This constitutes the modern therapeutic use of tuberculin. He believed that this acquired immunity to the poison of tuberculin was often a great advantage to the tuberculous patient. It was claimed by some clinicians that pure tuberculosis caused no fever, but whether this was so or not, it should be remembered that tuberculin is suitable only for non-febrile cases, for it is essential that the tuberculin treatment be carried out in such a manner as to avoid the occurrence of fever.

In his own experience, tuberculin alone had been used in five cases, with antiphthisin in two cases, and antiphthisin alone in twenty-two cases. The general treatment was the same for all. The peppermint treatment had been used in a number of cases, but it was found impossible to use the original mixture on account of the large quantity of alcohol it contained. However, the inhalation of the peppermint had been found so soothing to the cough that it had been continued. In his cases the temperature had been noted every two hours by day, and every four hours by night. He had used pure tuberculin in seven patients. In two there was so much difficulty in establishing a tolerance that antiphthisin was used instead. No harmful results were observed, and only once was there abscess formation. This was due to the failure to observe the cloudiness in the tuberculin, and its unfitness for use. Two of the five cases in which only tuberculin was used had recovered sufficiently to be practically well, and to return to their occupations. Two of these patients appeared to be in a desperate condition, and he should not have expected from their appearance at the commencement of the treatment that they would have lived so long. If he were correct in his observations upon these particular cases, he certainly had been remiss in the past, because he had seen many such cases go on from bad to worse until death had kindly brought relief. It was better, he thought, to try to do all we could for suffering humanity -to be a deluded optimist, than a scientific pessimist. If it were true that each organism excretes its own specific poison, and that the bacilli excrete a particular poison, each of its own kind, then it was possible that tuberculin contained besides the poison affecting the animal preyed upon, the specific poison for the bacilli themselves. If it could be shown that the death of the bacilli were caused, not by exhaustion of the proper food in the culture medium, but by the excretion into it of their particular poison, then we might reasonably hope for the isolation of this poison. What we needed was something which would kill the bacilli of tuberculosis in the tuberculous patient without injuring the patient in any way. Professor Klebs claimed that this had been found in his antiphthisin, which was supposed to be composed of a chemical modification of tuberculin, containing all the germicidal and curative principles, without the toxins. This claim had certainly been bitterly disputed, but it had also been supported by many competent observers. Of the twenty-two cases which he

had treated with antiphthisin, ten bad been in such an advanced stage of the disease that if none had improved it would have been little to the discredit of the treatment; but in four there was marked improvement, and of the five which did not improve, in only one was the treatment carried out for more than a week or two. He had certainly been greatly encouraged by his experience with antiphthisin, even in these nine desperate cases. Nine of the cases were not nearly so ill, yet a number had not shown the improvement one would have naturally expected, and three had grown worse. He would say, therefore, that the cases treated with tuberculin had done better than those treated with antiphthisin.

R. H. CHITTENDEN, M.D., of New Haven, presented a paper upon

NUCLEINS AND NUCLEO-PROTEIDS IN THEIR RELA-TION TO INTERNAL SECRETION.

He said that it was now known that the removal of the pancreas or liver caused death, because of the deprivation of the system of those internal secretions emanating from these glands, and influencing the general metabolism of the body. Experiments had shown that the pancreatic gland poured into the blood some secretion which destroyed the sugar in the blood, and which was absolutely essential to the maintenance of the physiological equilibrium. This was not true of all glands, at least not to the same extent. It had been shown that in the suprarenals the active principle of the secretion was obtained only in the medulla of the gland. The secretion of these glands is soluble in water, dilute alcohol, and in aqueous solutions it dialyzes readily through parchment; hence, the active principle cannot be a proteid body. It was moreover fairly stable, and also fairly resistant to the action of the gastric juice. Its physiological power was destroyed by the action of alkalies, oxidizing agents, and by continued boiling. It was apparently a powerful reducing body, and by oxidation, a rose-red color was produced, accompanied by a rapid loss of physiological action. It had been estimated that one eight-hundredth of a grain of the pure active principle was sufficient to produce physiological results on the heart and arteries of an adult man; hence the amount actually elaborated by the suprarenal gland must be exceedingly small.

The thyroid principle is an organic iodin compound, containing a large proportion of iodin and considerable phosphorus in organic combination. Thyro-iodin can be prepared from the thyroid glands of man and animals by boiling the glands with sulphuric acid, or treating them with digestive fluids. The iodin is in firm combination. The bulk of the compound consists of an albumin and a globulin. The physiological activity of the thyroid gland has been proved by experiment to be due to thyro-iodin, and excessive doses of this substance produce the same symptoms as large doses of the thyroid gland. To the chemist it seemed evident that the different gland cells must be endowed with a distinctive form of cell activity. Cell protoplasm, whatever its origin, has a certain uniformity of composition, and the most characteristic bodies were the nucleo-albumins and the nucleo-proteids. They are characterized by containing more or less phosphorus.

Nucleic acid is a white, amorphous powder, soluble in water, and having a strong affinity for all proteids. It contains as much as ten per cent. of phosphorus. But under the head of nucleic acid we had to deal with a large class of bodies, giving a diversity of internal structure, clearly suggestive of corresponding differences of function. One or more of these acids was to be found in every cell of the body, generally combined with some form of proteid. The ready convertibility of these nucleins, and the fact that many other catabolic products may be obtained from them, afford good reasons for believing that the nucleins and the nucleo-proteids are the most probable antecedents of the internal secretions.

E. S. BOLAND, M.D., of South Boston, presented a paper upon

EXTRAUTERINE PREGNANCY IN ITS RELATION TO THE GENERAL PRACTITIONER.

He said that from June, 1891, to June, 1896, he had attended 851 pregnancies, and had met with five cases of ectopic gestation. All five ruptured before the diagnosis was made. They were operated upon, and made a good recovery. He thought it probable that many of these cases were overlooked, or wrongly diagnosticated. The pinched face, clammy perspiration, shallow breathing and feeble voice, and the feeble and irregular pulse, should lead the physician to at once conclude that some terrible abdominal accident had happened. If these symptoms were associated with a history of irregular menstruation or cessation of the flow, there was good ground for believing that one had to deal with a ruptured ectopic gestation. He had not found digital examination per vaginam of much value after rupture, except in excluding uterine pregnancy. The discharge of decidua had occurred in almost all of his cases. In two there had been nothing characteristic of the true condition until the occurrence of rupture. After this occurrence the physician should be able to make the diagnosis, and should insist upon prompt operation. Ice had been recommended by some to check the hemorrhage, but if it were depended upon, it was probable that the undertaker would continue its use. The operation should, whenever possible, be done by a competent surgeon. The after-treatment should embrace the use of sterilized salt solution and strychnia.

M. H. RICHARDSON, M.D., of Boston, gave an abstract of his paper on

ECTOPIC GESTATION,

Referring particularly to the diagnosis and treatment. He said it was admitted generally that conception took place, in the vast majority of cases, in some part of the Fallopian tube. The observations regarding the occurrence of abdominal pregnancy are now believed to be unreliable and misleading, and that supposed cases of abdominal pregnancy are really due to rupture of a tubal gestation. Out of 60,000 cases treated in Braun's clinic in seven years, only five were extrauterine pregnancies. Formad, in 3500 autopsies, found thirty-five cases. Modern observations, however, show that it is by no means so infrequent. In one year at the Massachusetts General Hospital, out of about 300 laparotomies, there were twelve operations for

extrauterine pregnancy. He had seen several cases in which rupture of a tubal pregnancy had taken place before the time of the occurrence of the next menstrual period. The commonest variation in menstruation is that in which the flow is delayed for a few days or weeks, and when it does begin is usually scanty or irregular. It had been found that under the microscope differentiation could not be made always between the decidual shreds and those passed in some cases of dysmenorrhea. The diagnosis of extrauterine pregnancy was not usually difficult. He had known it to be mistaken, however, for a simple miscarriage, and also the diagnosis of extrauterine pregnancy to be made in cases of subserous fibroids. Between rupture of an extrauterine pregnancy and rupture of other sacs the diagnosis was often very difficult. Hemorrhage from chronic salpingitis and from other sources made it impossible to establish the diagnosis in the absence of the usual signs of pregnancy. Under special conditions, the policy of palliation might be employed, but ordinarily prompt laparotomy was the only proper course. Were the objections to laparotomy tenfold greater, he would still recommend this operation as the best and safest method of treating extrauterine pregnancy. In intraperitoneal ruptures immediate abdominal section was demanded in every instance, except where the patient was evidently moribund. With prompt resort to these modern methods of treatment, he thought, in time the mortality from extrauterine pregnancy would be as slight as the mortality is now from normal pregnancy.

H. P. BOWDITCH, M.D., of Boston, delivered the annual discourse upon

VIVISECTION.

He took for his theme the recent effort of the anti-vivisectionists to secure by legislation the prevention of vivisection. He said that it needed no professional education to know that medical science must be based upon physiology. Physiology could only hope to advance by a resort in certain instances to vivisection. The opposition movement sprang from one of the noblest instincts of the human breast-the desire to prevent suffering. In considering this "misguided benevolence" one was reminded of a recent utterance of Mr. Roosevelt: "Conscience without common sense may lead to folly, which is the handmaiden of crime." These people imperatively demand, not the restriction, but the total abolition of vivisection. Some of the leaders even deny the right of the human race to profit by the sufferings of animals. It should be remembered: (1) That those who are in charge of the institutions where vivisection is practised are equally competent to determine the existence of cruelty as those constituting the rank and file of the auti-vivisectionists; (2) that no abuse of vivisection has been shown; (3) that the governing bodies have both the will and the power to put a stop to such abuses should they occur; and (4) that existing statutes furnish sufficient protection against vivisection, as well as against cruelty at large.

In 1874, in England, a Royal Commission was appointed to investigate this subject. The Commission entirely acquitted the English physiologists of the charge of cruelty, and pronounced a merited eulogium upon them.

But the action of this Commission was remarkable, for it acquitted the accused, but placed them under police surveillance for life! The law growing out of this work of the Commission was still more remarkable, for it made it penal to torture domestic animals in any way, whereas wild animals might be tortured as much as any one might desire, provided only that it was not done for scientific purposes! The first outbreak of the anti-vivisection movement in this country occurred in New York in 1881, when, under the leadership of Mr. Henry Bergh, an attempt was made to secure a law for the abolishment of vivisection. After the exposure of the garbled evidence upon which this advocacy was based, the legislature refused to pass such a law, and went so far as to furnish distinct protection to the men of science in the legitimate use of vivisection. The President of the Massachusetts Humane Society not long ago called attention to the failure of anti-vivisection movements in various parts of the world, and suggested that the Society should cooperate with the medical profession for the proper restriction of vivisection. Unfortunately the Society has not acted upon this sound advice.

Turning, then, to another aspect of the question, the speaker called attention to the fact that we knew nothing whatever about pain, except that it was a subjective sens tion. We were often struck by the different degrees of suffering experienced by different individuals under apparently the same circumstances. There was epparently a rough proportion between the acuteness of pain and the degree of intellectual development. It was entirely impracticable, therefore, to draw reliable conclusions regarding the sensations of the lower animals, based upon a comparison with our own sensations under similar circumstances. All that we know about this is derived from the cries or other external evidence of some condition which the economy repels. Even such highly developed animals as the horse and the dog often furnish evidence that they do not experience pain in the same degree and manner as the human subject. These external evidences of suffering are reflex movements, and it is well known, may take place under partial anesthesia, without the existence of consciousness. The "spasm of agony" of sensational writers is, therefore, better described as a nerve-muscle reaction. Dr. Bowditch suggested a proper definition of pain would be: "Consciousness of the excessive stimulation of a sensory nerve." This definition excludes those cases in which the brain is narcotized, or separated from the rest of the nervous system.

But there still remained, he said, to be considered the question of how far it is the right of one individual to suf fer for another, and how far may future good compensate for present evil. To this he would answer, that we unhesitatingly submit ourselves and those we love to physical suffering, in the hope of future benefit. The law which bids us bear one another's burdens is a beneficent one, and we cannot escape from it if we would. But vivisection involves suffering of a lower animal for the benefit of the whole human race, and for all time. Moreover, physiologists, in their experiments, cause suffering utterly unagnificant when compared to that inflicted upon animals, for little or no cause; so that as far as the charge of cruelty

is concerned, the physiologists may claim exemption on the same ground as the sportsman; and as regards the iustification for the infliction of pain, the advantage is in favor of the physiologist. Again, the relations of animals to each other are such as to justify, from a moral point of view, an indictment of cruelty against Nature herself. There is usually less suffering in connection with the animals operated upon or killed in the laboratory than there is in these animals in a state of nature. Aside from a feeling of mercy, the physiologist, for the sake of convenience, uses an anesthetic, in order that the struggling and cries of the animal may not distract his mind from the subject in hand or derange his delicate instruments. It has been calculated by Professor Yeo that seventy-five per cent, of the animals are rendered absolutely unconscious to pain by the giving of an anesthetic, but the mere administration of an anesthetic to an animal is not as an agreeable process as to the human subject. In trifling operations it is much better, probably, for the animal not to give an anesthetic. Of the twenty-five per cent. of operations done without an anesthetic, it is probable that twenty per cent. are about as painful as vaccination, four per cent. as painful as the healing of a wound, and one per cent. as painful as an ordinary surgical operation performed without an anesthetic.

Now, what have we gained from vivisection? The foundation of our science—the discovery of the circulation of the blood-was made possible only by examinations on living animals. The proper mode of applying ligatures to arteries and the antiseptic treatment of wounds have reached their present state of perfection chiefly by experiments on animals. The surgery of the past has been robbed of much horror simply by this introduction of the use of the ligature instead of the use of torturing hot irons. The therapeutic use of antitoxin in diphtheria shows already that the physician has within his grasp the means of successfully treating one of the most dreaded of diseases. Who will dare to say that this boon has been dearly purchased by the lives of a number of guineapigs? Commercial experiments illustrating the danger to life of sewage-polluted water have cost many thousand human lives, whereas the knowledge which has enabled us to guard successfully against cholera has cost the lives of a few mice! We should remember the words of Him who said: "Ye are of more value than many sparrows."

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM JUNE 23, 1896, TO JUNE 29, 1896.

Major Daniel M. Appel, Surgeon, is relieved from duty at Fort Porter, New York, and ordered to the new post near Little Rock, Ark., for duty.

Captain Aaron H. Appel, Assistant Surgeon, is relieved from duty as examiner of recruits at Chicago, Ill., and ordered to Fort Porter, New York, for duty.

Leave of absence for one month, to take effect about the 5th proximo, is granted Captain Walter D. McCaw, Assistant Surgeon, Fort Ringgold, Tex.

Leave of absence for two months, to take effect on or about August 1, 1896, is granted Major Louis M. Maus, Surgeon, Fort Sam Houston, Tex.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM JUNE 30, 1896, TO JULY 6, 1896.

Leave of absence for two months, to take effect on or about July 8, 1896, or as soon thereafter as practicable, is granted Colonel Charles T. Alexander, Assistant Surgeon-General.

Captain William B. Davis, Assistant Surgeon, will, in addition to his present duties, take charge of the Medical Supply Depot in New York City during the absence on leave of Colonel Charles T. Alexander, Assistant Surgeon-General.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM JULY 7, 1896, TO JULY 13, 1896.

The extension of leave of absence, on account of sickness, granted Major James C. Worthington, Surgeon, is further extended one month, on account of sickness.

Leave of absence, for two months, to take effect on or about July 15, 1896, is granted Colonel Dallas Bache, Assistant Surgeon-General, Headquarters Department of the Platte.

CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JULY 4, 1896.

June 20th.—Surgeon I. G. HENEBERGER, detached from the marine rendezvous New York, and ordered to the hospital Widow's Island.

Passed Assistant Surgeon E. S. BOGERT, ordered to the New York Navy Yard, July 2d.

Passed Assistant Surgeon T. C. CRAIG, detached from the New York Navy Yard, July 2d, and ordered to the marine rendervous, New York.

July 2d.—Passed Assistant Surgeon W. F. ARNOLD, detached from special duty in China and Japan and ordered to return home. Assistant Surgeon H. F. PARRISH, ordered to the Naval Laboratory, New York City.

CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JULY 11, 1896.

July 7th.—Medical Inspector J. C. WISE, detached from the Washington Navy Yard and ordered as a member of the Board of Inspection and Survey, July 15th.

Medical Inspector R. A. MARMION, detached from the Board of Inspection and Survey, July 15th, and ordered to the Washington Navy Yard.

Passed Assistant Surgeon S. S. WHITE, detached from the Neval Academy and ordered to the "Thetis."

Passed Assistant Surgeon G. A. LUNG, detached from the "Thetis," ordered home, and granted two months' leave.

July 8th.—Surgeon P. A. LOVERING, detached from the New York Naval Hospital and ordered to the "Oregon."

Passed Assistant Surgeon C. H. T. LOWNDES, detached from the Washington Navy Yard and ordered to the Naval Hospital & Philadelphia.

July 10th.—Surgeon C. U. GRAVATT, to Norfolk with draft of men, and then home and three months' leave.

Assistant Surgeon R. G. BRODRICK, to the "Franklin."

CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JULY 18, 1896.

July 14th.—Surgeon R. C. PERSONS, orders to duty at Naval Hospital revoked and ordered to continue on present duty.

Passed Assistant Surgeon H. N. T. HARRIS, ordered to the Pensacola Navy Yard.

July 15th.—Surgeon S. H. DICKSON, ordered to the "Texas"
Assistant Surgeon J. M. MOORE, detached from the Naval Hepital, Norfolk, and ordered to the "Texas."

July 17th.—Assistant Surgeon A. FAREWHOLT, detached from the "Monterey" and ordered to the Mare Island Hospital, Cal.